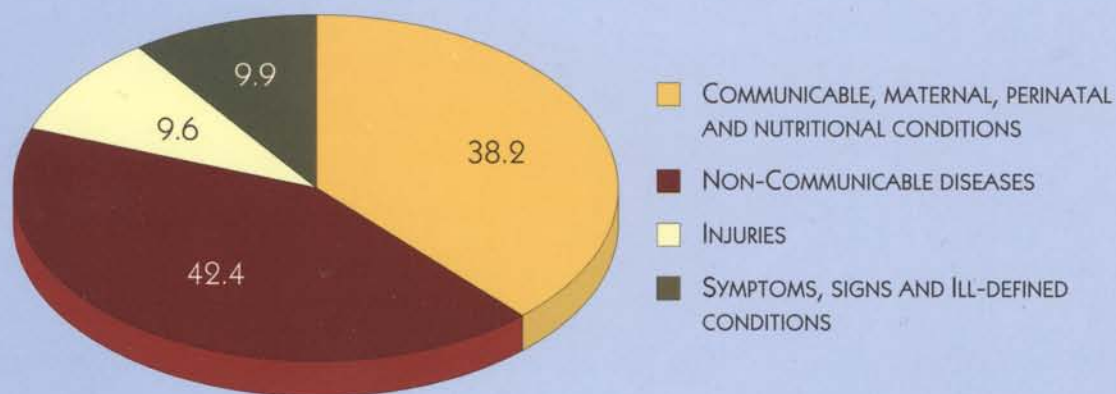




REPORT ON CAUSES OF DEATH IN INDIA 2001 - 2003



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FOREWORD

The data on Causes of Death is extremely useful for planning of health programmes and for planning evidence based interventionist strategies in the country. The age, sex and cause-specific mortality rates by residence are important indicators which help monitoring the health trends in the population.

2. In India, the Registration of Births & Deaths Act, 1969 provides under Section 10(2) and Section 10(3) for certification of Causes of Death by a medical practitioner. This is popularly known as Medical Certification of Causes of Death (MCCD) which is expected to provide a reliable data base for generating mortality statistics. But, MCCD has not taken roots to the extent desired and is thus not able to produce representative and reliable statistics on mortality as part of the Vital Statistics System. That is why, the country had decided in early 2004-05 to undertake a Special Survey of Deaths using an advanced form of Verbal Autopsy. The Special Survey of Deaths for the period 2001-03 has been conducted under the domain of Sample Registration System (SRS). The assignment of cause of death has been done through a process of medical evaluation by two independent trained physicians. Following the method, this is the First Report on all Causes of Death of the country which provides direct estimation of mortality.

3. The Office of the Registrar General, India (ORGI) has prepared this Report jointly with the Centre for Global Health Research (CGHR), St. Michael's Hospital, University of Toronto. This is joint effort of both the ORGI and CGHR in which the latter has provided the technical support. The First Report reviews and presents the overall Causes of Death in the country by cause groups stratified by gender, Empowered Action Group (EAG) States and Assam vs. the Other States. Besides, it reviews the mortality patterns in specific age groups following the same set of certification. There is a special Chapter which discusses the mortality by major regions in the country. The grouping for the Causes of Death is as per the World Health Organisation (WHO) guidelines.

4. The purpose of this effort is palpably to present the overall causes of death. It comes out that 48 per cent of the total reported deaths are concentrated in the age group 0-54 years. Every fifth death captured pertains to that of a child and every seventh death to that of an infant. Females are more vulnerable below the age of 5 vis-à-vis the males. There is a higher incidence of deaths below the age of 5 in EAG States and Assam which also account for a higher proportion of infant deaths. This is true also in the case of neonatal deaths. In the Other States, Cardio-vascular disease is a major killer and its proportion is almost double than that in the EAG States and Assam. One of the interesting findings of the study is in regard to the mortality in the younger age group of 15-24. More deaths in this age group are due to non-medical causes such as intentional self-harm, un-intentional injuries and motor vehicle accidents. Together, they account for every third death in the age group. There is a higher proportion of females dying due to intentional self-harm than males.

5. There are several interesting results which the study has presented, some of which may require intervention by the Government. Besides the infant deaths which constitute a significant proportion of early deaths, there are deaths due to Tuberculosis, HIV/AIDS

and Malaria which can all be reduced through timely and focused interventions. The problem areas having been identified, Government interventions can be more precise, definite and focused. I am certain that the findings in this Report will serve a useful purpose and will help the Health Department both at the Centre and in the States for planning interventionist strategies far better.

6. I must compliment the Office of the Registrar General, India and CGHR and all those who have contributed towards this effort. A lot of time has been devoted to analyzing the data and ensure its integrity by the team under the overall supervision of Registrar General, India. I compliment them all for their efforts. I conclude with the sincere hope that they will continue this work further and give the country benefit of similar data for the subsequent years.

Madhukar Gupta
Home Secretary

New Delhi
March, 2009

FOREWORD

Mortality data by cause of death for the entire cross-section of the population in the country is essential for informed decision making in the Health Sector. The statistics on causes of death, hitherto, available from the Medical Certification of Causes of Death (MCCD) under the Civil Registration System (CRS) suffer from the problem of both the coverage and quality. The present Report on Causes of Death: 2001-03 for the country based on the Special Survey of Deaths carried out under the domain of Sample Registration System (SRS) is comprehensive in coverage and is representative. It would certainly then not only bridge the gap but also serve as a benchmark for future studies.

2. The underlying causes of death in the Report has been determined through an advanced form of Verbal autopsy called the “RHIME” or Representative, Re-sampled, Routine Household Interview of Mortality with Medical Evaluation method. The classification conforms to the World Health Organisation’s (WHO’s) classification of diseases to facilitate comparison with similar national and international estimates. The Report presents the top ten causes of death stratified by gender, Empowered Action Group of States(EAG) & Assam and Other States, and rural and urban areas across all ages and also separately for important age groups. In addition, mortality from specific conditions such as Tuberculosis, Malaria, Maternal Conditions and AIDS (direct only) have been analysed which provides an insight into the prevalence of these diseases. This was required and will be useful as these are monitored globally. Besides, there is a review of mortality situation in different regions of the country which highlights the inter-regional variations among the causes of death.

3. The key findings of the Report are that overall non-communicable diseases are the leading causes of death in the country for 42% of all deaths. Communicable diseases, maternal, perinatal and nutritional constitute for another 38% of the deaths. Injuries and ill-defined causes account for 10% of deaths each. In the EAG states and Assam, there is a significantly higher proportion of all deaths due to communicable diseases (50%) vis-à-vis the Other States (28%). In the case of non-communicable diseases, it is the Other States which have a higher proportion (50%) vis-à-vis the EAG states and Assam (33%). In the rural areas, there are far more deaths due to communicable diseases (41%) than in urban areas (25%). However, non-communicable diseases cause significant deaths both in urban (56%) and rural areas (40%). Across all ages, cardiovascular diseases are the leading causes of death (19%), followed by

respiratory diseases (9%), diarrhoeal diseases (8%), perinatal conditions (6.3%), respiratory infections such as acute pneumonia (6.2%), tuberculosis (6%) and malignant and other neo-plasm (5.7%). Malaria accounts for 3% of the total deaths and maternal conditions 1.8% of the total female deaths in the country. AIDS (direct) causes 0.5% of the deaths.

4. The findings of the Report, which are the first from a direct source, provide quantitative assessment with the relative magnitude of the various diseases, injuries and their risk factor. It is expected to serve as a valuable input for aligning the existing intervention strategies under the National Rural Health Mission (NRHM) by focusing more on areas requiring attention such as the EAG States. The findings on the specific conditions of mortality should help in assessing the effectiveness of the ongoing health programmes to combat Malaria, Tuberculosis and HIV/AIDS.

5. We are thankful to the Special Secretary and Registrar General, India, Additional Registrar General and other officers/officials for bringing out these findings successfully in collaboration with the Centre for Global Health Research.

Naresh Dayal
Secretary,
Ministry of Health and Family Welfare

New Delhi
March, 2009

PREFACE

Cause-specific data on mortality form the core of any health planning strategy. The size and geographical distribution of occurrence of deaths by their causes for different age-group, sex, residence and various other characteristics are of immense value to the public health planners, medical scientist, epidemiologists and researchers. Currently, the information on causes of mortality based on the Medical Certification of Cause of Death (MCCD) is restricted largely to deaths in select urban hospitals. The overall coverage being low, it is unable to provide the mortality envelope with the causes for the entire urban area in the country. With the merging of Survey of Causes of Death for rural areas to the Sample Registration System (SRS) in 1999, there is no data being collected on causes of death for the rural area of the country. Thus, there was an imperative need for reliable, timely, representative and relevant information on causes of death due to diseases, injuries and risk factors for the entire cross-section of population in the country to yield cause-specific mortality profile at the national level.

2. The Special Survey of Death to cover all deaths from 2001-03 has been conducted by the Office of Registrar General, India (ORGI) during 2004-05, in the Sample Registration System which is an ongoing, low cost and long-term fertility and mortality measurement system. This has been completed in technical collaboration with the Centre for Global Health Research (CGHR). This is an effort made in which the underlying causes of death have been determined using the instrument of Verbal Autopsy (VA). The classification conforms to the International Classification of Diseases (ICD) Tenth (Xth) revision.

3. The present Report on Causes of Death: 2001-2003, which is based on direct source, provides causes of death cross classified by age, sex, residence, EAG states and Assam vs. Other States and major regions across the country. The Report reviews the top ten causes of death stratified by different variables besides examining the mortality from special conditions such as Tuberculosis, Malaria, Maternal Conditions and HIV/AIDS. The important findings of the Report, inter-alia, are that the non communicable diseases are the predominant cause in the overall mortality pattern in the country. However, in the EAG States and Assam as also in Rural Areas, it is the communicable, maternal, perinatal and nutritional conditions which have caused maximum proportion of deaths. The cardiovascular disease, a lifestyle disease, is the leading cause across all ages. This is followed by respiratory diseases, diarrhoeal diseases, perinatal conditions, respiratory infections, tuberculosis and cancer.

4. This is the second Report which is being brought out based on Special Survey of Death (2001-03), the first one being on Maternal Mortality which was released in October, 2006. There has been a gap of more than two years which is long. But this has been

mainly on account of time spent in assignment of causes of death, its verification and analysis. Despite the gap in time, the data has not lost its importance and we are certain that the readers will find it useful and relevant.

5. The SRS has been a joint effort of the Centre and State Governments. The field work for the present study has become possible with the active support of the officials in the Directorates of Census Operations including the Directorates of Economics and Statistics of Kerala and Maharashtra and the SRS Unit of the Vital Statistics Division at New Delhi headquarters. The analytical work on causes of death and risk factors has been done in close collaboration with the Centre for Global Health Research (CGHR). In particular, I must acknowledge the efforts of SRS staff under the leadership of Dr. C. Chandramouli, Joint Secretary & Officer on Special Duty, Shri R.C. Sethi, Additional Registrar General, Shri Bhaskar Mishra, Shri Sunil Jain, Deputy Registrar Generals, Shri A. K. Saxena, Assistant Registrar General, Dr. D. K. Dey, Joint Director, Shri Nitish Kumar, Shri C. K. Jha, Senior Research Officers, Shri A. K. Shrivastava, Deputy Director, Shri Harmeet Singh Maddh, Statistical Investigator Gr. I, Dr. Manoj K Jain, Investigator (Social Studies) Gr.I and Ms. Archana Nahar, Statistical Investigator Gr. III. I must also thank Professor Prabhat Jha, and his academic partners Professor Rajesh Kumar from the School of Public Health, PGIMER, Chandigarh; Dr. V. Gajalakshmi, Epidemiological Research Center, Chennai; Dr. Prakash C. Gupta, Healis-Seskarhia Institute of Public Health, Mumbai and in particular Professor Sir Richard Peto from the University of Oxford. There are a few others whose names have been acknowledged separately.

6. We plan to take this work further for years 2004-06 for which data are getting ready. We expect that we shall be bringing out the next Report on causes of death soon.

Devender Kumar Sikri
Special Secretary and
Registrar General, India

New Delhi
March, 2009

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SUMMARY

Background:

Long-term mortality measurement by cause, gender and geographic area has been the requirement of every country. With this in view, Medical Certification of Causes of Death (MCCD) was introduced in the country by providing statutory backing under Section 10 of the Registration of Births and Deaths Act, 1969. Despite its operationalization in almost all the States/UTs, the scheme has been working at different levels of efficiency across the states in terms of coverage, reporting and quality of data. At present, deaths occurring in urban medical institutions are only being covered under the scheme. Owing to these limitations, the cause specific mortality flowing from MCCD is far from satisfactory. The gap was bridged to an extent by the 'Survey of Causes of Death' undertaken in sample villages of selected Primary Health Centres (PHC) in rural areas. However, the 'Survey of Causes of Death' had been merged with the Sample Registration System (SRS) from 1999, thus encompassing both rural and urban areas. Since then, a system of Verbal Autopsy under the domain of SRS has been in operation. In order to effect improvement in the system, the Office of the Registrar General, India (ORGI) in collaboration with the Centre for Global Health Research (CGHR) has been trying to establish a reliable system to measure the causes of death in the country. This is the Second Report on Causes of Death in the country, following the Maternal Mortality Report which was released in October 2006.

Methods:

The Special Survey of Deaths (SSD) was implemented during 2004-05 covering all deaths from 2001-2003 in Sample Registration System (SRS). The SRS covered over 6,645 small areas (sample units) in all the States and Union Territories. The causes of death have been determined using an advanced form of Verbal Autopsy called the "RHIME" or Representative, Re-sampled, Routine Household Interview of Mortality with Medical Evaluation method. The SRS field staff that have been trained extensively for collection of the symptoms, signs and key circumstances leading to death using a two-page structured form with a brief narrative in local language, have undertaken the survey. A random sample of about 5% of the units has been re-surveyed by an independent team to ensure the quality of fieldwork, completeness and accuracy. The assignment of causes of death has been done through a medical evaluation by two independent trained physicians who have examined the field reports using a web-based system developed specifically for

the study. The cases resulting into continuing disagreements were referred to a third physician to adjudicate the final ICD-10 code.

Results:

- ✦ Overall non-communicable diseases are the leading causes of death in the country, constituting 42% of all deaths. Communicable, maternal, perinatal and nutritional conditions constitute another 38% of deaths. Injuries and ill-defined causes constitute 10% of deaths each. However, majority of ill-defined causes are at older ages (70 or higher years) and most of ill-defined deaths are likely to be from non-communicable diseases.
- ✦ In the EAG states and Assam, there is a significantly higher proportion of all deaths due to communicable, maternal, perinatal and nutritional conditions (50%) vis-à-vis 28% in the Other States. In the case of non-communicable diseases, it is the Other States which have a higher proportion (50%) vis-à-vis the EAG states and Assam (33%). Though the gap of 17% in the category is lower than that of the communicable diseases between the two groups of states, it is still significant. The mortality due to injuries is also more in proportion in Other States.
- ✦ Rural areas report more deaths due to communicable, maternal, perinatal and nutritional conditions (41%). The urban areas have a lower number of deaths from communicable, maternal, perinatal and nutritional conditions but a higher proportion from non-communicable diseases (56%). Their proportion is less in rural areas (40%). Injuries constitute about the same proportion in both rural and urban areas; however, the specific causes of injury vary.
- ✦ Overall, the leading cause of death is cardiovascular disease (19%), followed by respiratory diseases (namely chronic obstructive pulmonary disease or COPD, asthma, other respiratory diseases; 9%), diarrhoeal diseases (8%), perinatal conditions (6.3%), respiratory infections such as acute pneumonia (6.2%), tuberculosis (6%), malignant and other neoplasms (5.7%), senility (5.1% – which is concentrated at ages 70 and higher), unintentional injuries: other (4.9%), and symptoms, signs and ill-defined conditions (4.8%).
- ✦ Notable differences by gender are seen in the case of diarrhoeal diseases with 10% of female deaths against 7% of male deaths, tuberculosis with 5% of female deaths vis-à-vis 7% male deaths, and cardiovascular diseases with 17% female deaths versus 20% male deaths.

* Among children aged 0 to 4 years, the top 10 causes of death are:

- Perinatal conditions (33%),
- Respiratory infections (22%),
- Diarrhoeal diseases (14%),
- Other infectious and parasitic diseases (11%),
- Symptoms, signs and ill-defined conditions (3.4%),
- Unintentional injuries: other (3.2%),
- Nutritional deficiencies (2.8%),
- Malaria (2.7%),
- congenital anomalies (2.7%), and
- Fever of unknown origin (1.5%).

Deaths due to perinatal conditions constitute a higher proportion among males with a majority of these deaths concentrated in the first week of life. However, deaths from other causes are higher in proportion among females.

* Among infants (age below 1 year), the top 10 causes of death are:

- Perinatal conditions (46%),
- Respiratory infections (22%),
- Diarrhoeal diseases (10%),
- Other infectious and parasitic diseases (8%),
- Congenital anomalies (3.1%),
- Symptoms, signs and ill-defined conditions (3%),
- Nutritional deficiencies (2%),
- Unintentional injuries: other (1.4%),
- Malaria (1.1%), and
- Fever of unknown origin (0.9%).

Deaths due to perinatal conditions are in a higher proportion among males whereas deaths due to most of the other causes are higher in proportion among females as is observed in the case of children aged 0 to 4 years.

* Among children aged 1 to 4 years, the top 10 causes of death are:

- Diarrhoeal diseases (24%),
- Respiratory infections (23%),
- Other infectious and parasitic diseases (16%),
- Unintentional injuries: other (8%),
- Malaria (7%),

- Nutritional deficiencies (4.8%),
- Symptoms, signs and ill-defined conditions (4.5%),
- Fever of unknown origin (3%),
- Digestive Diseases (1.7%), and
- Congenital anomalies (1.5%).

The proportion of deaths from the top10 causes except for unintentional injuries: other; symptoms, signs and ill-defined conditions; and congenital anomalies are higher among the females.

✳ Ages 5-14 is generally a period of lower mortality than at ages 0-4 years. The ten leading causes of death at ages 5-14 are:

- Diarrhoeal diseases (17%),
- Unintentional injuries: other (16%),
- Other infectious and parasitic diseases (15%),
- Respiratory infections (10%),
- Malaria (9%),
- Ill-defined conditions (5%),
- Motor vehicle accidents (4%),
- Cancers (2.9%),
- Digestive diseases (2.9%), and
- Fever of unknown origin (2.9%).

✳ The ten leading causes of death at ages 15-24 are:

- Intentional self-harm (16%),
- Unintentional injuries: other (12%),
- Symptoms signs and ill-defined conditions (7%),
- Motor vehicle accidents (7% - 12% in males versus 2% in females),
- Tuberculosis (7%)
- Maternal conditions (13% – for females),
- Cardiovascular diseases (6.3% – chiefly reflecting rheumatic or other inflammatory conditions),
- Diarrhoeal diseases (6.2%),
- Other infectious and parasitic diseases (4.8%), and
- Malaria (4.7%).

✳ In the age group 25-69, the mortality rate rises sharply. The leading causes of death in this age group are:

- Cardiovascular diseases (25%),
- COPD, asthma, other respiratory (10.2%),
- Tuberculosis (10.1%),
- Malignant and other neoplasms (9%),
- Symptoms signs and ill-defined conditions (5.3%),
- Digestive diseases (5.1%),
- Diarrhoeal diseases (5%),
- Unintentional injuries: Other (4.6%),
- Intentional self-harm or suicide (3%), and
- Malaria (2.8%).

Cardiovascular disease is the leading cause of death among males as well as females. The male-female patterns are similar, except for a notably higher proportion of female deaths from cancer (12%) vis-à-vis males (8%). In contrast, males have higher number of deaths from tuberculosis (11%) versus females (8%) and digestive diseases (6%) versus females (4%).

- * The specific analysis of causes of death from tuberculosis, malaria, maternal conditions and AIDS shows that tuberculosis is the leading cause among these four conditions, causing about 6% of all deaths, and 10% at ages 25-69. Malaria follows it, causing about 3% of all deaths- with the caveat that the malaria diagnosis may represent other fevers that are not due to malaria. Maternal conditions account for 2% of female deaths at all ages, 3% at ages 25-69 and 9% at ages 15-49.
- * AIDS is a direct cause of death in about 3.7% of deaths at ages 15-59 in the states with higher HIV prevalence namely Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Mizoram, Manipur and Nagaland. It is responsible for only 0.4% in the remaining lower prevalence states. These ratios are comparable to those observed differences in the antenatal clinic data from the National AIDS Control Organisation.
- * There is a marked regional variation in the contribution of various causes to the leading deaths. Cardiovascular disease is the leading cause of death in the all regions of India, with the highest proportion in the Southern region (25%) and the lowest in the Central region (12%). The other prominent causes of death across different regions are respiratory diseases, diarrhoeal diseases, perinatal conditions, tuberculosis and cancer.
- * Respiratory diseases account for substantial proportion of deaths in all the regions with the maximum reported in the Central region and the minimum in the North-Eastern region. The highest proportion of deaths due to diarrhoeal diseases is observed in Eastern region (10.4%) followed closely by Central (9.8%) and North-Eastern regions (9.2%).

- * Diarrhoeal diseases account for more than 5% of the total deaths in North, West and Southern regions respectively. Perinatal conditions are responsible for the maximum proportion of deaths in Central region (7.9%) followed by West (7.3%), East (7%), North-East (6.1%), South (4.1%) and North (3.9%). The proportion of deaths attributable to tuberculosis ranges from 5.1% in Southern region to 7.2% in Central region. Cancer deaths are more pronounced in South, North, North-East and Western regions.
- * In Eastern and North-Eastern regions, deaths due to malaria are notably higher at 6% and 5% respectively, of deaths due to all causes. In the Southern region, suicide constitutes nearly 5% of all deaths at all ages. Senility and ill-defined symptoms and signs constitute 8% to 12% of deaths across different regions with the highest (12%) in Southern region. The results are influenced by the age at death, with the States having higher proportion of older populations showing more deaths due to ill-defined causes.

Conclusion:

It is observed that large number of deaths in the country have been occurring in early ages as well as in middle ages, which is suggestive that proper prevention programs and health care facilities can certainly help alleviate this situation. The findings of the Report highlight specifically the need for augmenting interventionist strategies and programs for reducing the mortality resulting from health problems in childhood. Similarly, there is a need to ensure that tuberculosis, HIV/AIDS and malaria programs as well as those addressing maternal mortality are implemented in areas afflicted by the problem to reduce the proportion of deaths taking place due to these diseases in the country. The spread of non-communicable diseases, particularly, the vascular, respiratory disease and cancers, which are causing maximum deaths in rural and urban areas across EAG states & Assam and the Other States, is another important finding of the Report.

There is, however, a need for a word of caution. The mortality results presented in the Report should be interpreted carefully as the chance of misclassification of causes is not completely ruled out. However, despite this limitation, the study brings out findings which should definitely help enrich understanding of the mortality situation and challenges thereof in the country.

* * *

CHAPTER – 1

INTRODUCTION, SURVEY DESIGN AND ESTIMATION PROCEDURE

1.1 Introduction:

The Sample Registration System

1.1.1 The Office of the Registrar General, India, has been, since 1969-70, conducting a continuous demographic survey known as the Sample Registration System (SRS) in the randomly selected sample units (village/ segment of a village in rural areas and census enumeration block in urban areas) spread across the country to provide reliable annual estimates of fertility, mortality and other advanced indicators at the state and national level. In order to retain the representative character of the SRS sample by capturing the change in the age structure, marital status, literacy and other demographic variables, the sample is replaced every ten years based on the latest census frame, the last replacement being in 2004 which is based on 2001 census. The present study is, however, based on the sample drawn on the 1991 census frame covering over 6 million people from about 1.1 million households across 28 states and 7 union territories. In all 6,645 sample units (4,410 rural and 2,235 urban), each comprising nearly 150 households and about a 1,000 population were covered at the national level. On an average, about 20-25 births and 8-10 deaths annually were reported per unit.

1.1.2 The SRS is a dual-record system wherein a resident part-time enumerator continuously records births and deaths in each household within the sample unit every month. A full-time SRS supervisor thereafter independently collects the vital events along with other related details for each of the preceding six month periods during the calendar year. The two sets of data are matched and the partially matched/ un-matched events are re-verified in the field to get an unduplicated count of events. Details of the SRS sample design, sampling methods and field methods are published elsewhere.¹

1.1.3 Statement 1 gives the number of sample units and population covered under SRS in 2003, separately for rural and urban areas across all the states and union territories.

¹ Sample Registration System, 2003- Annual Report, Office of the Registrar General, India

Statement 1- Number of sample units and population covered under SRS: India, States and Union Territories 2003.

India/ States / Union Territories	Number of sample units			Population covered (in '000)		
	Total	Rural	Urban	Total	Rural	Urban
India	6645	4410	2235	6452	5064	1387
Bigger States						
1. Andhra Pradesh	310	210	100	310	243	67
2. Assam	275	200	75	252	208	44
3. Bihar	361	308	53	457	422	35
4. Gujarat	300	200	100	280	227	53
5. Haryana	180	110	70	217	165	52
6. Karnataka	375	260	115	364	289	75
7. Kerala	250	150	100	319	254	65
8. Madhya Pradesh	299	215	82	302	254	48
9. Maharashtra	375	200	175	345	241	103
10. Orissa	405	300	105	314	251	63
11. Punjab	200	120	80	178	130	48
12. Rajasthan	350	250	100	345	296	49
13. Tamil Nadu	375	200	175	355	237	118
14. Uttar Pradesh	615	428	187	671	568	103
15. West Bengal	475	300	175	485	377	109
Smaller States						
1. Arunachal Pradesh	56	50	6	48	41	7
2. Chhattisgarh	101	84	18	95	84	10
3. Goa	70	40	30	63	45	17
4. Jharkhand	139	92	47	124	99	25
5. Himachal Pradesh	190	140	50	103	75	28
6. Jammu & Kashmir	166	100	66	141	101	40
7. Manipur	150	100	50	139	102	37
8. Meghalaya	120	100	20	65	56	10
9. Mizoram	32	16	16	23	12	11
10. Nagaland	10	*	10	5	*	5
11. Sikkim	60	50	10	63	54	9
12. Tripura	75	60	15	89	80	9
13. Uttaranchal	35	22	13	31	25	6
Union Territories						
1. Andaman & Nicobar Islands	45	30	15	33	23	10
2. Chandigarh	30	5	25	29	8	21
3. Dadra & Nagar Haveli	25	20	5	29	25	4
4. Daman & Diu	17	15	2	21	20	1
5. Delhi	130	10	120	107	18	89
6. Lakshadweep	10	5	5	13	9	4
7. Pondicherry	40	20	20	36	23	13

*= Due to operational difficulties, the survey in rural areas could not be undertaken.

Note: Rural and Urban may not add up to the total population due to rounding.

1.2 SURVEY DESIGN AND ESTIMATION PROCEDURE:

Design of the survey

1.2.1 The present study has used an advanced form of Verbal Autopsy(VA) called the "RHIME" or Representative, Re-sampled, Routine Household Interview of Mortality with Medical Evaluation method to determine the causes of death. Each household in the SRS sample units where a death had occurred has been visited, retrospectively, by the SRS supervisors to collect the details of signs and symptoms for determining to the extent possible, the underlying causes of death. The RHIME method was introduced for determining the cause of death in SRS in some of the states from December 2002 as part of the continuous half-yearly survey. This special survey of all deaths within the SRS for calendar years 2001-2003 was conducted between May-October 2004(excluding those already covered in the routine half-yearly surveys). A total of about 140,000 deaths at all ages were included in the Special Survey of Deaths for which RHIME instruments were used. Due to out-migration and change in households, 12% of deaths could not be surveyed.

1.2.2 The RHIME forms were designed after seeking expert opinion from the World Health Organization (WHO) and also after review of the literature on validation studies. These forms were extensively piloted in five states. Based on these pilots and review, an open/closed questionnaire formats has been developed and adopted. All forms have a common format that includes a basic demographic profile of the respondent and the deceased, details of illness and a narrative section. Forms are available in English or Hindi with the narrative written in the local language. These forms conform to the latest standards and are provided as a single-leaf, double sided layout in easy to carry booklets with simple instructions for their use. Each type of form (neonatal, child, adult and maternal) is colour coded and bound according to the type of form for ease of identification in field.

1.2.3 The RHIME method necessitated repeated trainings for the 800 SRS supervisors and another 60 staff deployed by the academic partners on an average of three times on how to collect the symptoms, signs and key circumstances leading to death using a two-page structured form with a brief narrative in local language. Importantly, the field staff was instructed not to assign a cause of death, but only collect the major symptoms and a narrative of the events leading to death. The training aims to improve the Supervisors

ability to collect data from the respondents in the open/closed format using symptom checklists and probing questions. The goal is to obtain a complete and logical history of the signs, symptoms and supportive details of each death.

1.2.4 The details of the RHIME method, quality control checks and validation results and preliminary results of double coding to date have been published². Earlier studies that have used very similar methods have established reasonably high specificity, but variable sensitivity for most of the common causes of death among adults.

1.2.5 The assignment of cause of death involved medical evaluation by two independent trained physicians who examined the field reports using a web-based system developed specifically for this study. This has been done to reduce the inter-physician variation. Field Reports were assigned randomly based on language of the narrative to two of the 120 physicians from all states so as to increase comparability across states. The two physicians on examination of the Reports would either agree on the underlying three-digit code of the *International Classification of Disease, tenth revision (ICD-10)* assigned for the cause of death failing which their forms were anonymously shuffled between them automatically by the web-based system for reconciliation. Selected cases were treated as equivalent. Continuing disagreements were referred via the web-based system to a senior third physician who adjudicated the final ICD-10 code. All physicians have access to web-based training tools including case-studies, diagnostic guidelines and ICD-10 lists. Physicians are drawn from different states across the country so as to ensure that cross-state comparisons are valid.

1.2.6 A random sample of about 5% of the units was re-surveyed by an independent team as a check on the field work quality, completeness and accuracy. These were also submitted for medical review and revalidated. During the early phase of study, about 10% of each SRS Supervisors visits were re-sampled so as to provide early training input and correction of method. During the later phases, the percentage was reduced to about 5%.

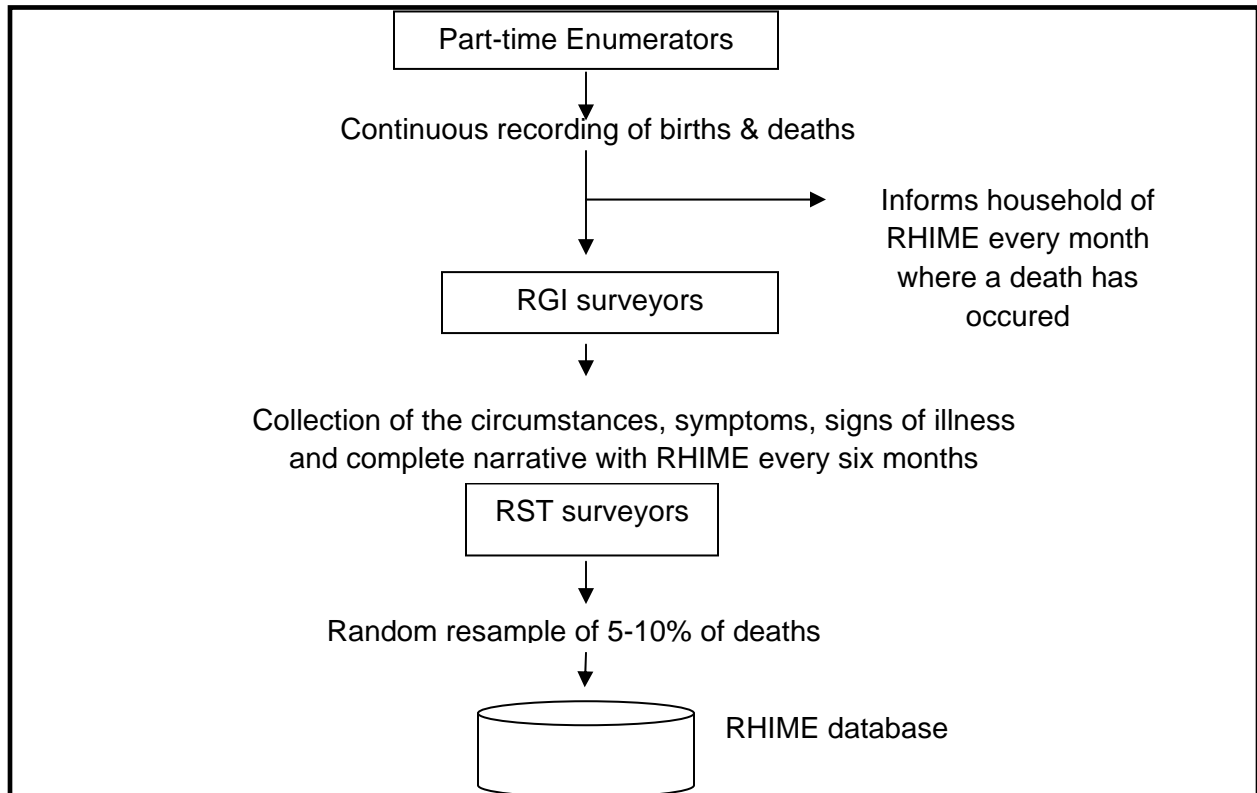
1.2.7 Data entry involved double entry of forms into a database or through use of optical scanners. In both cases, there was a 100% verification of all fields and the narrative in local language. After scanning, select information after removing the identification particulars and a complete image of the narrative are extracted from the database for each record.

² Jha P, Gajalakshmi V, Gupta PC, Kumar R, Mony P, Dhingra N, Peto R. Prospective study of 1 million deaths in India: rationale, design, and validation results. *PLoS Med* 2005; 3 : e18; Jha P, Jacob B, Gajalakshmi V & Others. A Nationally Representative Case-Control Study of Smoking and Death in India. *NEJM* 2008

These fields and an image of the narrative are used to create modified reports entitled “Physicians Reports”. Custom designed, internet-based software permits the electronic distribution and management of physical reports as well as the remote collection of cause of death information.

Figure 1. Million Death Study RHIME Activities

A. Field data activities



B. Cause of death assignment

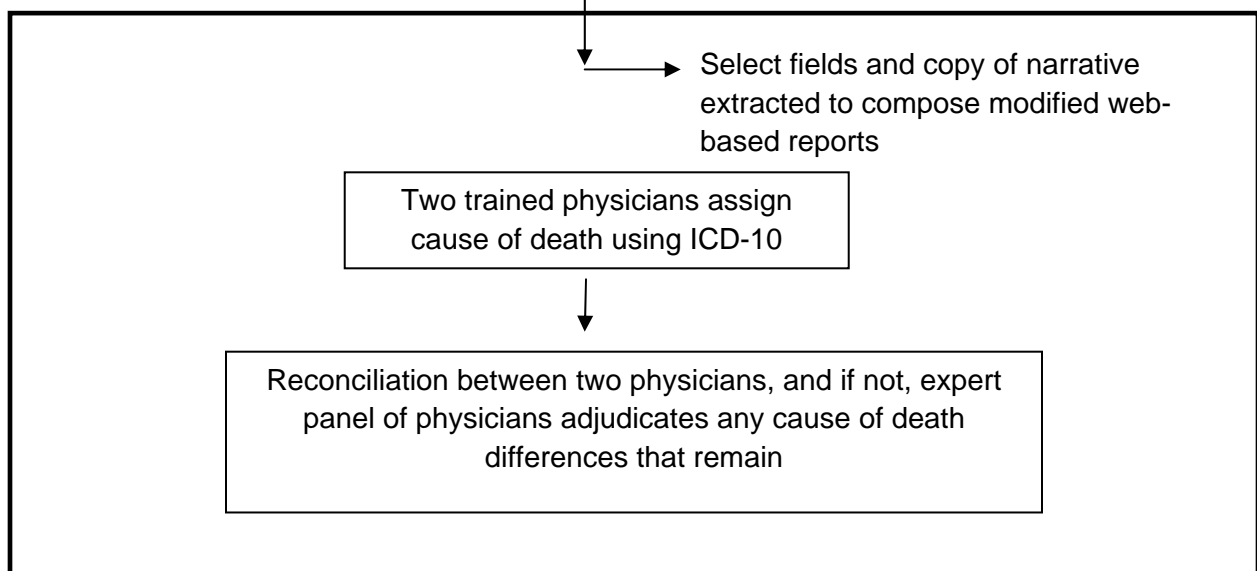


Figure-2. Survey of causes of Death (2001-03) - Overview of Methods

Design questionnaire	Combined open/closed format. Structured questions accompanied by an open-ended narrative. Symptom list to assist attribution of deaths.
Questionnaire layout	One-leaf, double-sided, scan able forms. Four age-specific forms (neonatal, child, adult and maternal). Forms available in either English or Hindi, with narrative written in local language.
Interviewers	Non-medical RGI Supervisors (mostly male) with knowledge of local language(s) and trained in RHIME instruments.
Interview technique	One-on-one interviews during home visits. Duration of 30-45 mins.
Respondents	Family members or other informants (usually neighbours or close associates of the deceased).
Recall period	Usually < six months, but useful up to three years.
Data quality	Random resample of 5-10% of all deaths to ensure completeness of fieldwork.
Derivation of diagnosis	Medical review of cause by two independent physicians using modified RHIME reports (Physician Reports) and an internet-based web application. Adjudication of disagreements by an expert physician.
Mortality classification	The International Classification of Diseases, 10 th Revision (ICD-10).
Sample size	0.14 Million

Estimation Procedure

1.2.8 The various diseases have been grouped into three categories: (I) communicable, maternal, perinatal and nutritional conditions; (II) non-communicable diseases; and (III) injuries. This classification conforms to the WHO's "Global Burden of Disease (GBD)" categorization of deaths and would facilitate comparability with WHO estimates for India and for other countries. For transparency and ease of understanding, a fourth category namely, symptoms, signs and Ill-defined conditions has been added.

1.2.9 For the purpose of this Report, the states have been grouped into two major categories; the first category comprises the "Empowered Action Group" (EAG) states of Bihar and Jharkhand, Madhya Pradesh and Chhattisgarh, Orissa, Rajasthan, Uttar Pradesh and Uttaranchal. The state of Assam has also been added to this list. These states have

had historically higher child mortality indicators, higher poverty levels and lower life-expectancy and other indicators than most other states. The second category covers the remaining major states and has been labelled as 'Other States'. The other major grouping is rural or urban residence, as defined in the SRS.

1.2.10 The major statistics presented are simple: totals of deaths by major causes, along with specific proportions for the various diseases at different ages, gender (male or female) and residence (rural/urban). In all, 91% of all deaths collected (113,692 of 124,992) had been double coded by two physicians. The reasons for excluding 11,300 deaths (9%) from analysis were chiefly due to poor quality of image and non-legible or incorrect language code (4.8%), incomplete coding, meaning double codes were not yet assigned (3%), and missing or incorrect, age and gender (1.3%). Thus, the study is based on the 113,692 deaths coded to date.

1.2.11 In SRS, the usual practise is to present the estimates of vital indicators after applying multiplication factors to the sample values. The proportions based on estimates generally do not vary significantly from those arrived from the sample values at broader level of aggregations. However, the results presented in the Report are based on sample deaths.

1.2.12 Statement 2 shows the comparison of the age structure of deaths in the SRS from 2001-03 to those in the Special Survey of Deaths (2001-03) by EAG states and Assam and Other States. The overall total suggests that the Special Survey of Deaths had a lower proportion of child deaths (age 0-4) and a higher proportion of adult deaths (age 60+) in comparison to the SRS. This is not surprising that retrospective surveys of mortality often will miss younger children. Statements 2.A to 2.C show the distribution of causes of death along with their ICD-10 codes for important age groups by male, female and person.

Statement 2 - Distribution of deaths by EAG states and Assam and Other states by age group: comparison of % of deaths in Special Survey of Deaths (SSD; 2001-2003) and Sample Registration System (SRS; 2001-2003)

Age group	EAG-SRS	EAG-SSD	Others-SRS	Others-SSD
0-4	31.2	26.8	16.8	12.3
5-14	4.3	4.2	2.4	2.0
15-24	4.8	5.1	4.4	4.7
25-34	4.9	5.0	5.4	5.7
35-44	5.6	5.5	6.8	6.9
45-59	12.6	13.0	15.8	16.4
60+	36.6	40.4	48.4	52.0

Statement 2A – Distribution of Deaths in India : Special Survey of Death, 2001-2003; Male

CAUSE OF DEATH	ICD - 10 CODES	MALE	AGE GROUP (% DEATHS)							
			0-4	5-14	15-24	25-34	35-44	45-54	55-69	
Communicable, Maternal, Perinatal & Nutritional Conditions										
Tuberculosis	A15-A19, B90	4,434	0.5	2.0	6.0	12.4	14.7	14.0	9.1	
HIV/AIDS	B20-B24	405	0.0	0.1	0.8	4.7	2.5	0.8	0.2	
Diarrheal diseases	A00,A01,A03,A04,A06-A09	4,181	12.3	15.2	5.1	3.2	3.2	3.3	4.6	
Malaria	B50-B54	1,708	2.4	8.1	4.8	3.0	2.6	2.5	2.2	
Other infectious and parasitic diseases	A02,A05,A20-A28,A30-A54, A57-A64, A65-A70,A74-A89,A92-A99,B00-B19,B25-B54,B58-B60,B64,B66-B72,B74-B76,B82-B89,B92-B99, G00-G05, N70-N74	2,185	9.8	13.5	5.2	2.6	2.2	2.0	1.4	
Respiratory infections	J00-J06, J10-J18, J20-J22, H65-H6	3,413	20.7	8.4	1.0	0.6	0.7	0.9	1.9	
Perinatal conditions	P00-P08, P10-P15, P20-P29, P35-P94, P96	4,014	36.9	.	.	.	.	.	.
Nutritional deficiencies	D50-D53,E00-E02, E40-E46,E50-E64	455	2.4	1.9	0.3	0.5	0.5	0.2	0.3	
Fever of unknown origin	R50	1,229	1.5	2.5	2.1	1.2	1.3	1.7	1.8	
Non-Communicable Diseases										
Malignant and other neoplasms	C00-C97,D00-D48	3,394	0.6	3.8	4.3	5.1	6.5	9.2	8.3	
Diabetes mellitus	E10-E14	973	0.0	0.2	0.4	0.6	1.4	2.0	2.5	
Neuro-psychiatric conditions	F01-F99, G06-G73, G90-G99	779	0.6	3.1	4.1	3.1	2.2	1.2	0.9	
Cardiovascular diseases	I00-I52,I60-I69, I70-I99, G81-83, R96	12,727	0.4	1.3	6.3	11.6	18.8	27.0	31.6	
Respiratory diseases	J30-J99	5,818	0.2	0.6	0.8	1.5	3.3	7.4	15.3	
Digestive diseases	K20-K23, K25-K31, K35-K38, K40-K67, K70-K93	2,474	0.7	2.9	3.1	5.5	9.2	7.6	4.7	
Genito-urinary diseases	N00-N64, N75-N99	1,377	0.3	1.2	2.0	2.2	2.6	2.7	2.8	
Musculoskeletal diseases	M00-M02, M05-M09, M11-M14, M20-M36, M60-M99	93	0.0	0.1	0.1	0.1	0.2	0.1	0.2	
Congenital anomalies	Q01-Q99	389	3.0	1.8	0.4	0.2	0.1	0.0	.	
Other Non-communicable diseases	D55-D89,E03-E07,E15-E16,E20-E35,E51-E89,H00-H62,H68-H95,K00-K14,L00-L99	195	0.3	0.4	0.4	0.1	0.2	0.2	0.3	
Injuries										
Unintentional injuries: Motor Vehicle Accidents	V01-V89	1,720	0.4	5.3	12.4	12.1	5.8	3.4	1.5	
Unintentional injuries: Other	W00-W99,X00-X59, Y40-Y89	3,237	3.4	19.4	14.7	9.8	8.2	5.2	2.8	
Intentional injuries: Suicide	X60-X84	1,448	.	1.6	14.3	10.1	6.0	3.1	0.9	
Intentional injuries: Other	Y00-Y09, Y35,Y36	483	0.1	0.9	3.1	3.7	2.4	1.0	0.3	
Injuries of undetermined intent	Y10-Y34	136	0.0	0.2	1.0	0.6	0.6	0.2	0.1	
Symptoms, Signs & Ill Defined Conditions										
Senility	R54	2,506	.	.	.	.	.	.	1.5
Ill-defined / All other symptoms, signs and abnormal clinical and laboratory findings	R00-R49,R51-R53,R55-R95, R98-R99	2,880	3.5	5.4	7.2	5.3	4.9	4.4	4.9	
Total		62,653	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Statement 2B – Distribution of Deaths in India : Special Survey of Death, 2001-2003; Female

CAUSE OF DEATH	ICD - 10 CODES	FEMALE	AGE GROUP (% DEATHS)						
			0-4	5-14	15-24	25-34	35-44	45-54	55-69
Communicable, Maternal, Perinatal & Nutritional Conditions									
Tuberculosis	A15-A19,B90	2376	0.6	3.2	7.5	13.4	13.3	9.7	5.6
HIV/AIDS	B20-B24	120	0.0	0.1	0.3	1.5	1.2	0.3	0.1
Diarrheal diseases	A00,A01,A03,A04,A06-A09	5065	15.3	19.6	7.2	6.1	5.2	5.1	7.5
Malaria	B50-B54	1786	3.0	10.7	4.6	4.0	3.6	4.0	3.1
Other infectious and parasitic diseases	A02,A05,A20-A28,A30-A54,A57-A64,A65-A70,A74-A89,A92-A99,B00-B19,B25-B54,B58-B60,B64,B66-B72,B74-B76,B82-B89,B92-B99,G00-G05,N70-N74	2211	11.2	16.7	4.4	2.9	2.5	2.6	1.7
Respiratory infections	J00-J06,J10-J18,J20-J22,H65-H67	3638	23.3	11.1	1.3	0.9	1.2	1.6	2.3
Maternal conditions	O00-O08,O10-O16,O20-O43,O47-O63,O67-O99	910	.	.	12.6	15.4	5.7	0.4	.
Perinatal conditions	P00-P08,P10-P15,P20-P29,P35-P94,P96	3148	29.2	.	.	.	.	.	.
Nutritional deficiencies	D50-D53,E00-E02, E40-E46,E50-E64	699	3.2	1.6	1.5	1.4	1.1	1.0	0.6
Fever of unknown origin	R50	1413	1.6	3.3	2.5	1.5	1.9	1.9	3.0
Non-Communicable Diseases									
Malignant and other neoplasms	C00-C97,D00-D48	3082	0.4	2.0	4.3	6.9	15.3	18.3	10.2
Diabetes mellitus	E10-E14	773	0.0	0.2	0.7	0.5	1.3	2.2	2.7
Neuro-psychiatric conditions	F01-F99,G06-G73,G90-G99	670	0.5	2.5	3.3	2.8	2.9	1.9	1.2
Cardiovascular diseases	I00-I52,I60-I69,I70-I99,G81-83,R96	8647	0.4	1.9	6.3	9.3	14.3	21.8	27.6
Respiratory diseases	J30-J99	4087	0.3	0.3	0.9	2.1	4.1	8.5	14.3
Digestive diseases	K20-K23,K25-K31,K35-K38,K40-K67,K70-K93	1220	0.9	2.8	3.3	2.9	5.2	4.6	3.0
Genito-urinary diseases	N00-N64,N75-N99	809	0.3	1.1	1.6	2.2	2.7	3.6	2.2
Musculoskeletal diseases	M00-M02, M05-M09, M11-M14, M20-M36, M60-M99	135	.	0.1	0.0	0.2	0.4	0.3	0.4
Congenital anomalies	Q01-Q99	300	2.3	1.5	0.5	0.2	0.2	.	0.0
Other Non-communicable diseases	D55-D89,E03-E07,E15-E16,E20-E35,E51-E89,H00-H62,H68-H95,K00-K14,L00-L99	228	0.6	0.6	0.4	0.4	0.4	0.4	0.4
Injuries									
Unintentional injuries : Motor Vehicle Accidents	V01-V89	364	0.5	2.1	1.7	1.4	1.3	1.0	0.7
Unintentional injuries : Other	W00-W99,X00-X59,Y40-Y89	2322	2.9	12.0	9.1	6.1	5.9	3.6	3.4
Intentional injuries : Suicide	X60-X84	1035	.	1.6	16.9	10.4	4.4	1.7	0.6
Intentional injuries : Other	Y00-Y09,Y35,Y36	97	0.1	0.4	0.9	0.7	0.5	0.1	0.1
Injuries of undetermined intent	Y10-Y34	48	0.0	0.1	0.6	0.3	0.2	0.1	0.0
Symptoms, Signs & Ill Defined Conditions									
Senility	R54	3301	.	.	.	.	.	.	3.1
Ill- defined/ All other symptoms, signs and abnormal clinical and laboratory findings	R00-R49,R51-R53,R55-R95,R98-R99	2555	3.4	4.6	7.2	6.6	5.5	5.4	6.3
Total		51,039	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Statement 2C – Distribution of Deaths in India : Special Survey of Death, 2001-2003; Person

CAUSE OF DEATH	ICD - 10 CODES	PERSON	AGE GROUP (% DEATHS)						
			0-4	5-14	15-24	25-34	35-44	45-54	55-69
Communicable, Maternal, Perinatal & Nutritional Conditions									
Tuberculosis	A15-A19, B90	6810	0.5	2.6	6.8	12.8	14.2	12.5	7.6
HIV/AIDS	B20-B24	525	0.0	0.1	0.5	3.4	2.0	0.6	0.2
Diarrheal diseases	A00, A01, A03, A04, A06-A09	9246	13.8	17.4	6.2	4.4	4.0	3.9	5.8
Malaria	B50-B54	3494	2.7	9.4	4.7	3.4	3.0	3.0	2.6
Other infectious and parasitic diseases	A02, A05, A20-A28, A30-A54, A57-A64, A65-A70, A74-A89, A92-A99, B00-B19, B25-B54, B58-B60, B64, B66-B72, B74-B76, B82-B89, B92-B99, G00-G05, N70-N74	4396	10.5	15.1	4.8	2.7	2.3	2.2	1.5
Respiratory infections	J00-J06, J10-J18, J20-J22, H65-H67	7051	22.0	9.7	1.1	0.7	0.9	1.1	2.0
Maternal conditions	O00-O08, O10-O16, O20-O43, O47-O63, O67-O99	910	.	.	6.5	6.4	2.1	0.1	.
Perinatal conditions	P00-P08, P10-P15, P20-P29, P35-P94, P96	7162	33.1	.	.	.	.	.	.
Nutritional deficiencies	D50-D53, E00-E02, E40-E46, E50-E64	1154	2.8	1.8	0.9	0.8	0.7	0.5	0.5
Fever of unknown origin	R50	2642	1.5	2.9	2.3	1.3	1.5	1.8	2.3
Non-Communicable Diseases									
Malignant and other neoplasms	C00-C97, D00-D48	6476	0.5	2.9	4.3	5.9	9.7	12.3	9.1
Diabetes mellitus	E10-E14	1746	0.0	0.2	0.5	0.5	1.3	2.1	2.6
Neuro-psychiatric conditions	F01-F99, G06-G73, G90-G99	1449	0.6	2.8	3.7	3.0	2.5	1.4	1.0
Cardiovascular diseases	I00-I52, I60-I69, I70-I99, G81-83, R96	21374	0.4	1.6	6.3	10.7	17.1	25.2	29.9
Respiratory diseases	J30-J99	9905	0.2	0.5	0.9	1.8	3.6	7.7	14.9
Digestive diseases	K20-K23, K25-K31, K35-K38, K40-K67, K70-K93	3694	0.8	2.9	3.2	4.4	7.7	6.6	4.0
Genito-urinary diseases	N00-N64, N75-N99	2186	0.3	1.2	1.8	2.2	2.6	3.0	2.6
Musculoskeletal diseases	M00-M02, M05-M09, M11-M14, M20-M36, M60-M99	228	0.0	0.1	0.1	0.2	0.2	0.2	0.2
Congenital anomalies	Q01-Q99	689	2.7	1.6	0.4	0.2	0.1	0.0	0.0
Other Non-communicable diseases	D55-D89, E03-E07, E15-E16, E20-E35, E51-E89, H00-H62, H68-H95, K00-K14, L00-L99	423	0.4	0.5	0.4	0.2	0.3	0.3	0.4
Injuries									
Unintentional injuries : Motor Vehicle Accidents	V01-V89	2084	0.5	3.7	6.9	7.6	4.2	2.6	1.1
Unintentional injuries : Other	W00-W99, X00-X59, Y40-Y89	5559	3.2	15.7	11.8	8.3	7.4	4.7	3.1
Intentional injuries : Suicide	X60-X84	2483	.	1.6	15.6	10.2	5.4	2.7	0.8
Intentional injuries : Other	Y00-Y09, Y35, Y36	580	0.1	0.6	2.0	2.4	1.7	0.7	0.2
Injuries of undetermined intent	Y10-Y34	184	0.0	0.2	0.8	0.5	0.5	0.2	0.1
Symptoms, Signs & Ill Defined Conditions									
Senility	R54	5807	.	.	.	.	.	.	2.2
Ill- defined/ All other symptoms, signs and abnormal clinical and laboratory findings	R00-R49, R51-R53, R55-R95, R98-R99	5435	3.4	5.0	7.2	5.9	5.1	4.7	5.4
Total		1,13,692	100.0	100.0	100.0	100.0	100.0	100.0	100.0

CHAPTER – 2

OVERALL MORTALITY PATTERNS AND LEADING CAUSES OF DEATH

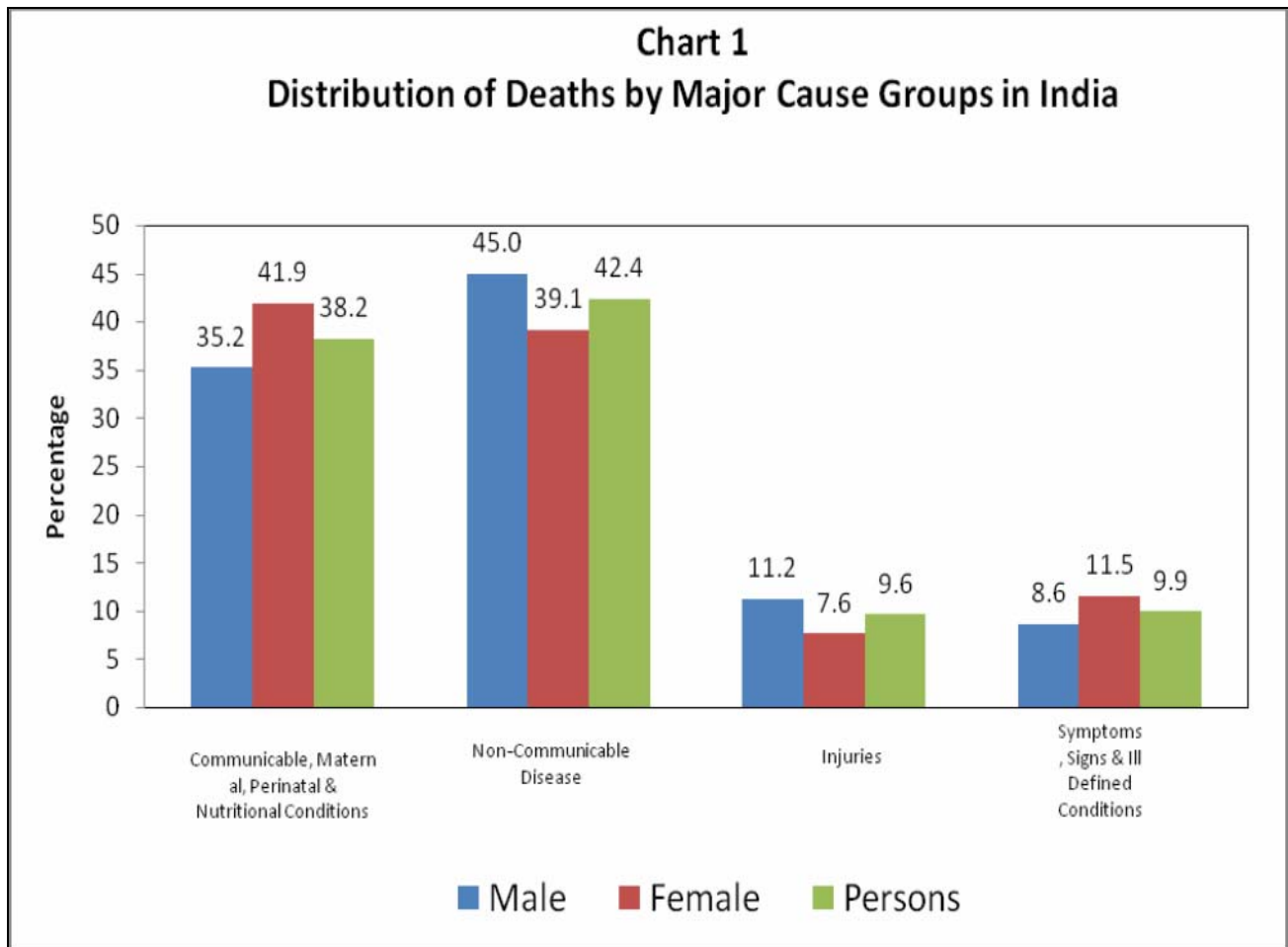
2.1 This Chapter reviews the overall causes of death in the country by cause groups, stratified by gender, EAG states and Assam versus other states, and rural versus urban. The cause groups adhere to the WHO's groupings which are followed generally for comparison with other similar national and international estimates.

2.2 Statement 3.A below gives the overall distribution of causes of death into major categories. As may be seen that overall, the non-communicable diseases (Group II) were the leading causes of death in the country, (constituting 42% of all deaths) during this period. The communicable, maternal, perinatal and nutritional conditions (Group I) follow it, and constitute 38% of deaths. There is a drift in the number of deaths from communicable to non-communicable diseases in the country, which is epidemiologically a good sign. Injuries (Group III) and ill-defined causes constitute the next major categories with a significant proportion i.e. 10% of total deaths each. However, majority of ill defined causes are at older ages (70 or higher years) and most of the ill-defined deaths are likely from non-communicable diseases.

Statement 3.A – Distribution of deaths by major cause groups in India: SSD, 2001-2003

Major Cause Groups	Number of Deaths (%)		
	Male	Female	Person
Communicable, maternal, perinatal and nutritional conditions(Group-I)	22,024 (35.2)	21,366 (41.9)	43,390 (38.2)
Non-communicable diseases (Group-II)	28,219 (45.0)	19,951 (39.1)	48,170 (42.4)
Injuries(Group-III)	7,024 (11.2)	3,866 (7.6)	10,890 (9.6)
Symptoms, signs and Ill-defined conditions	5,386 (8.6)	5,856 (11.5)	11,242 (9.9)
Total	62,653 (100.0)	51,039 (100.0)	113,692 (100.0)

Chart 1: illustrates the distribution of deaths by major cause groups in the country.

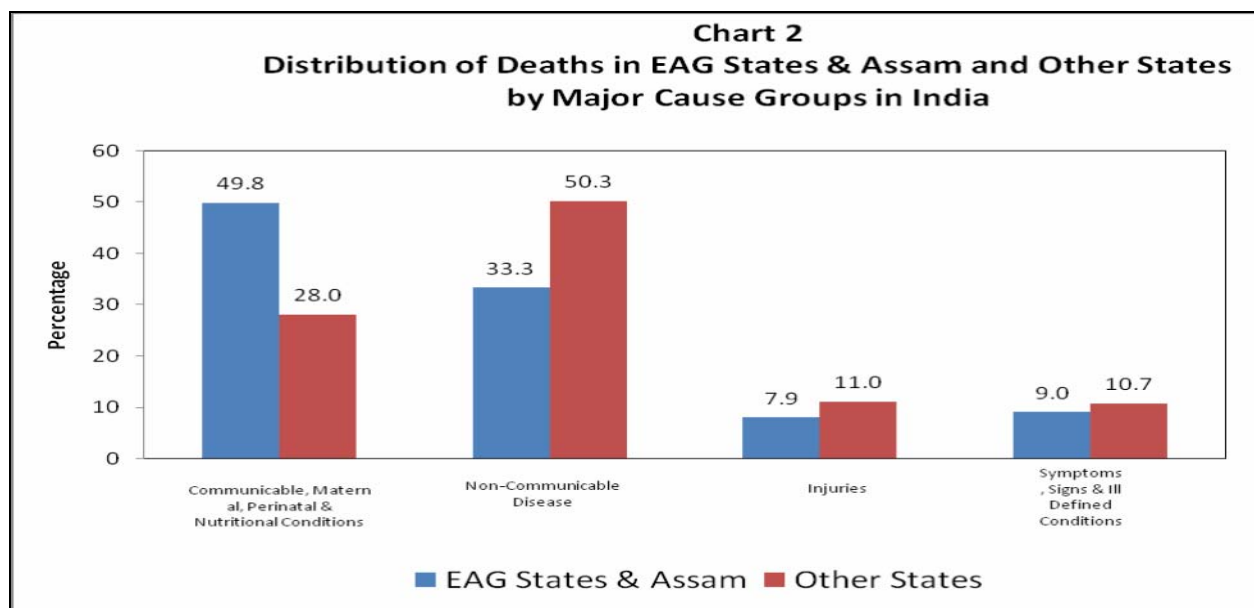


2.3 The patterns are different in the EAG states and Assam vis-à-vis Other States as would be seen from Statement 3.B. In the EAG states and Assam, there is a significantly higher proportion of all deaths due to communicable, maternal, perinatal and nutritional conditions (50%) vis-à-vis 28% in the Other States. In the case of non-communicable diseases, it is the Other States which have a higher proportion (50%) vis-à-vis the EAG states and Assam (33%). Though the gap of 17% in the category is lower than that of the communicable diseases between the two groups of states, it is still significant. The mortality due to injuries is also more in proportion in Other States. The distribution of deaths by gender shows that the proportion of deaths due to communicable diseases as well as ill-defined causes are more among females than the males in both the category of states. However, it is reverse in the case of non-communicable diseases and injuries.

Statement 3.B – Distribution of deaths by major cause-groups in India: SSD, 2001-2003; EAG States & Assam and Other States

Major Cause Groups	Number of Deaths (%)		
	Male	Female	Person
EAG States & Assam			
Communicable, maternal, perinatal and nutritional conditions	13,093 (46.3)	13,341 (53.9)	26,434 (49.8)
Non-communicable diseases	10,197 (36.0)	7,464 (30.2)	17,661 (33.3)
Injuries	2,672 (9.4)	1,545 (6.2)	4,217 (7.9)
Symptoms, signs and Ill-defined conditions	2,345 (8.3)	2,405 (9.7)	4,750 (9.0)
Total	28,307 (100.0)	24,755 (100.0)	53,062 (100.0)
Other States			
Communicable, maternal, perinatal and nutritional conditions	8,931 (26.0)	8,025 (30.5)	16,956 (28.0)
Non-communicable diseases	18,022 (52.5)	12,487 (47.5)	30,509 (50.3)
Injuries	4,352 (12.7)	2,321 (8.8)	6,673 (11.0)
Symptoms, signs and Ill-defined conditions	3,041 (8.9)	3,451 (13.1)	6,492 (10.7)
Total	34,346 (100.0)	26,284 (100.0)	60,630 (100.0)

Chart 2 exhibits the distribution of deaths by major cause groups in EAG states and Assam and Other states.

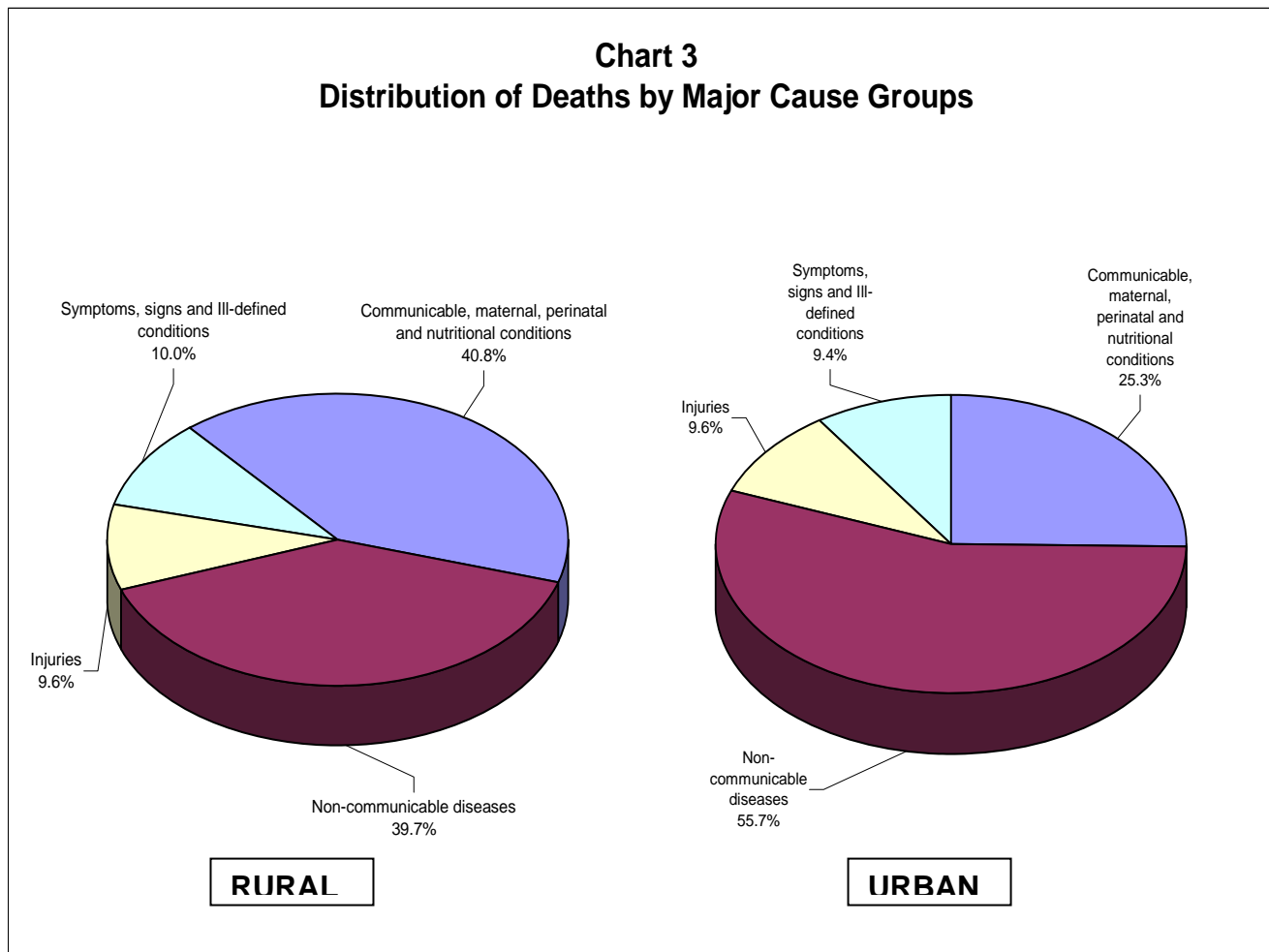


2.4 Statement 3.C below shows the results by rural and urban areas. In the rural areas, the pattern shows far more deaths due to communicable, maternal, perinatal and nutritional conditions (41%) than in urban areas (25%). However, non-communicable diseases cause significant deaths both in urban areas (56%) as well as in rural areas (40%). Injuries are in a similar proportion in both rural and urban areas although the specific causes of injury vary between them.

Statement 3.C – Distribution of deaths by major cause-groups in India: SSD, 2001-2003; Rural and Urban Areas

Major Cause Groups	Number of Deaths (%)		
	Male	Female	Person
Rural Area			
Communicable, maternal, perinatal and nutritional conditions	19,486 (37.6)	19,060 (44.6)	38,546 (40.8)
Non-communicable diseases	21,864 (42.2)	15,632 (36.6)	37,496 (39.7)
Injuries	5,835 (11.3)	3,208 (7.5)	9,043 (9.6)
Symptoms, signs and Ill-defined conditions	4,576 (8.8)	4,865 (11.4)	9,441 (10.0)
Total	51,761 (100.0)	42,765 (100.0)	94,526 (100.0)
Urban Area			
Communicable, maternal, perinatal and nutritional conditions	2,538 (23.3)	2,306 (27.9)	4,844 (25.3)
Non-communicable diseases	6,355 (58.3)	4,319 (52.2)	10,674 (55.7)
Injuries	1,189 (10.9)	658 (8.0)	1,847 (9.6)
Symptoms, signs and Ill-defined conditions	810 (7.4)	991 (12.0)	1,801 (9.4)
Total	10,892 (100.0)	8,274 (100.0)	19,166 (100.0)

Chart 3 displays the distribution of deaths in rural and urban India by major cause groups.

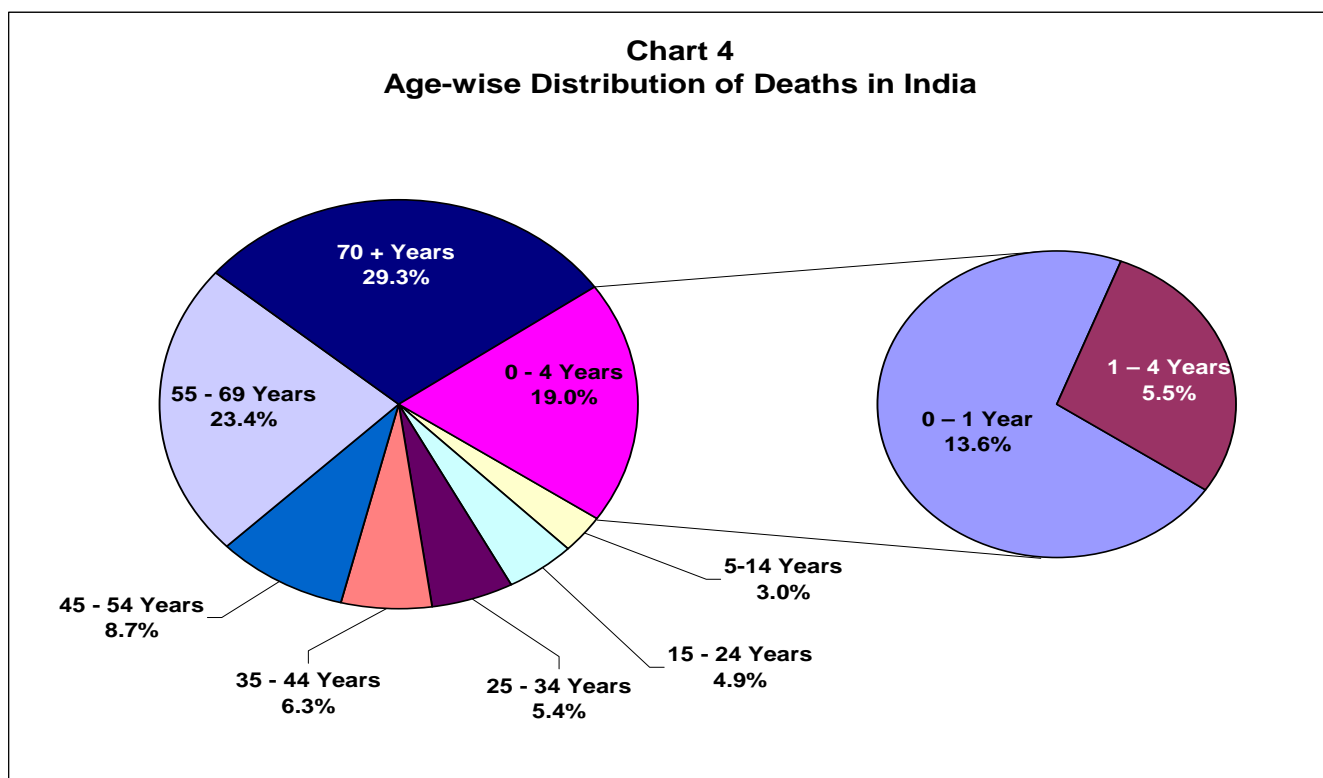


2.5 Statement 4.A below depicts the distribution of deaths by age and gender. About 48% of the total reported deaths are concentrated in the age group 0-54 years. This is high. But the real cause of concern is that every fifth death captured under the survey pertains to a child and every seventh to an infant. A higher percentage of female deaths occur below the age 5 than male deaths, despite the fact that neonatal mortality in the first month of life is more common among males. The proportion of female deaths is higher even in the age groups 5-14 years and 15-24 years. In contrast, men have a higher proportion of deaths occurring at ages 25-54 and 55-69.

Statement 4.A – Distribution of deaths by age and gender in India: SSD, 2001-2003

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0 – 1	8,155 (13.0)	7,295 (14.3)	15,450 (13.6)
1 – 4	2,729 (4.4)	3,479 (6.8)	6,208 (5.5)
0 – 4	10,884 (17.4)	10,774 (21.1)	21,658 (19.0)
5 – 14	1,695 (2.7)	1,736 (3.4)	3,431 (3.0)
15 – 24	2,708 (4.3)	2,851 (5.6)	5,559 (4.9)
25 – 34	3,555 (5.7)	2,538 (5.0)	6,093 (5.4)
35 – 44	4,524 (7.2)	2,591 (5.1)	7,115 (6.3)
45 – 54	6,520 (10.4)	3,366 (6.6)	9,886 (8.7)
55 – 69	15,442 (24.6)	11,168 (21.9)	26,610 (23.4)
70 +	17,325 (27.7)	16,015 (31.4)	33,340 (29.3)
Total	62,653 (100.0)	51,039 (100.0)	113,692 (100.0)

Chart 4 illustrates the age-wise distribution of deaths in India.

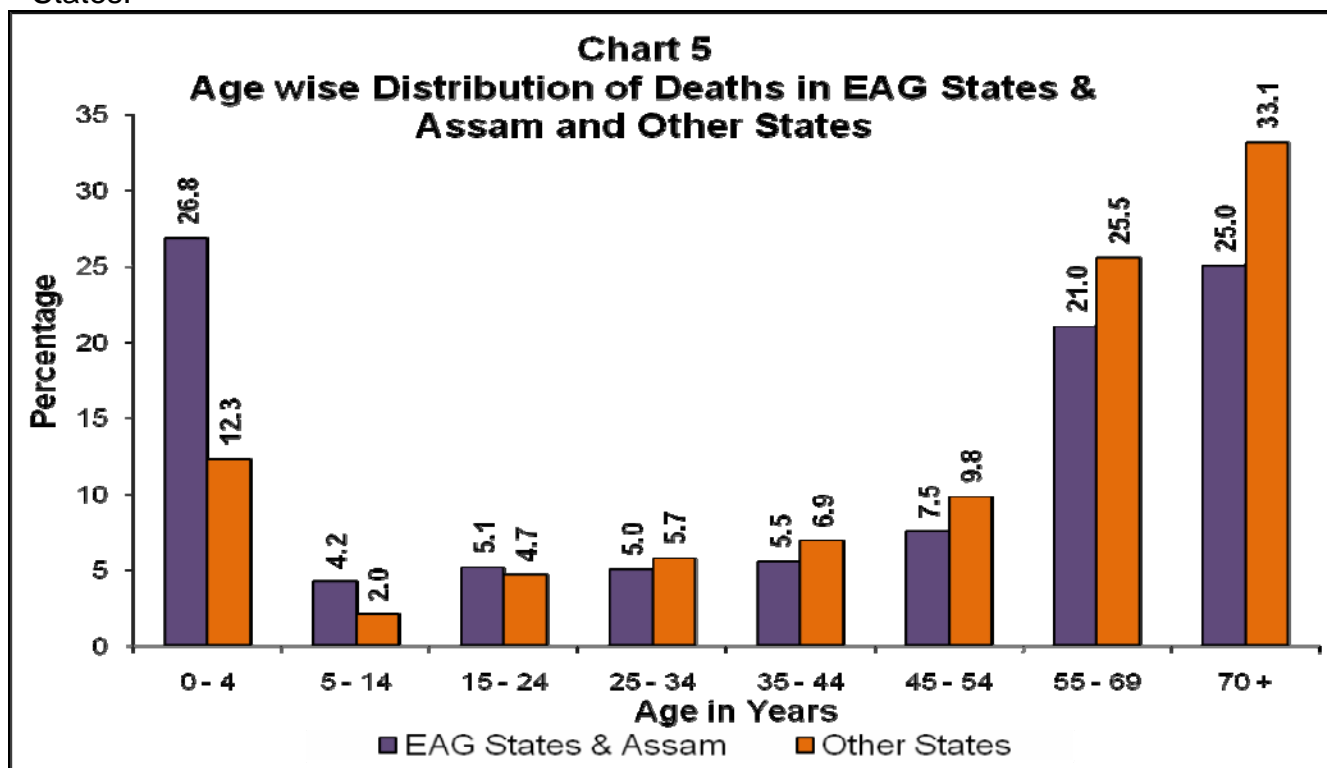


2.6 Statement 4.B shows the age and gender distribution of deaths by EAG states and Assam and Other states. The most striking finding is that nearly 27% of deaths in EAG states and Assam occur below the age 5 vis-à-vis 12% in the Other States. The infant deaths account for 19% of deaths in the EAG states & Assam vis-à-vis 9% in the Other States. So also, 8% of deaths occur in the EAG states & Assam at ages 1-4, against 3% in the Other States. In the Other States, proportion of deaths which occur at ages 55 and above is nearly 13% higher than that of EAG states and Assam. The survival rate below the age of 55 is lower in case of EAG states & Assam. Almost an identical pattern is witnessed among male and female deaths separately. The differences between rural and urban areas are shown in Statement 4.C. The proportion of deaths below age 5 in rural areas is 21% as against 10% in urban areas. This gap is narrower if compared to the difference which is observed between the EAG states and Assam vis-à-vis the Other States. There is nearly a two-fold difference in the proportion of deaths below age 1 and age group 1 to 4 in rural areas (15% and 6% respectively) if compared to urban areas (8% and 3% respectively).

Statement 4.B – Distribution of deaths by age and gender in India SSD, 2001-2003; EAG States & Assam and Other States

Age Group	Number of Deaths (% Deaths)					
	EAG States & Assam			Other States		
	Male	Female	Person	Male	Female	Person
0 – 1	5,160 (18.2)	4,755 (19.2)	9,915 (18.7)	2,995 (8.7)	2,540 (9.7)	5,535 (9.1)
1 – 4	1875 (6.6)	2,440 (9.9)	4,315 (8.1)	854 (2.5)	1,039 (4.0)	1,893 (3.1)
0 – 4	7,035 (24.9)	7,195 (29.1)	14,230 (26.8)	3,849 (11.2)	3,579 (13.6)	7,428 (12.3)
5 – 14	1,074 (3.8)	1,167 (4.7)	2,241 (4.2)	621 (1.8)	569 (2.2)	1,190 (2.0)
15 – 24	1,208 (4.3)	1,472 (5.9)	2,680 (5.1)	1,500 (4.4)	1,379 (5.2)	2,879 (4.7)
25 – 34	1,387 (4.9)	1,266 (5.1)	2,653 (5.0)	2,168 (6.3)	1,272 (4.8)	3,440 (5.7)
35 – 44	1,725 (6.1)	1,181 (4.8)	2,906 (5.5)	2,799 (8.1)	1,410 (5.4)	4,209 (6.9)
45 – 54	2,538 (9.0)	1,424 (5.8)	3,962 (7.5)	3,982 (11.6)	1,942 (7.4)	5,924 (9.8)
55 – 69	6,302 (22.3)	4,829 (19.5)	11,131 (21.0)	9,140 (26.6)	6,339 (24.1)	15,479 (25.5)
70 +	7,038 (24.9)	6,221 (25.1)	13,259 (25.0)	10,287 (30.0)	9,794 (37.3)	20,081 (33.1)
Total	28,307 (100.0)	24,755 (100.0)	53,062 (100.0)	34,346 (100.0)	26,284 (100.0)	60,630 (100.0)

Chart 5 depicts the age-wise distribution of deaths in EAG states and Assam and Other States.



Statement 4.C – Distribution of deaths by age and gender in India SSD, 2001-2003; Rural & Urban Areas

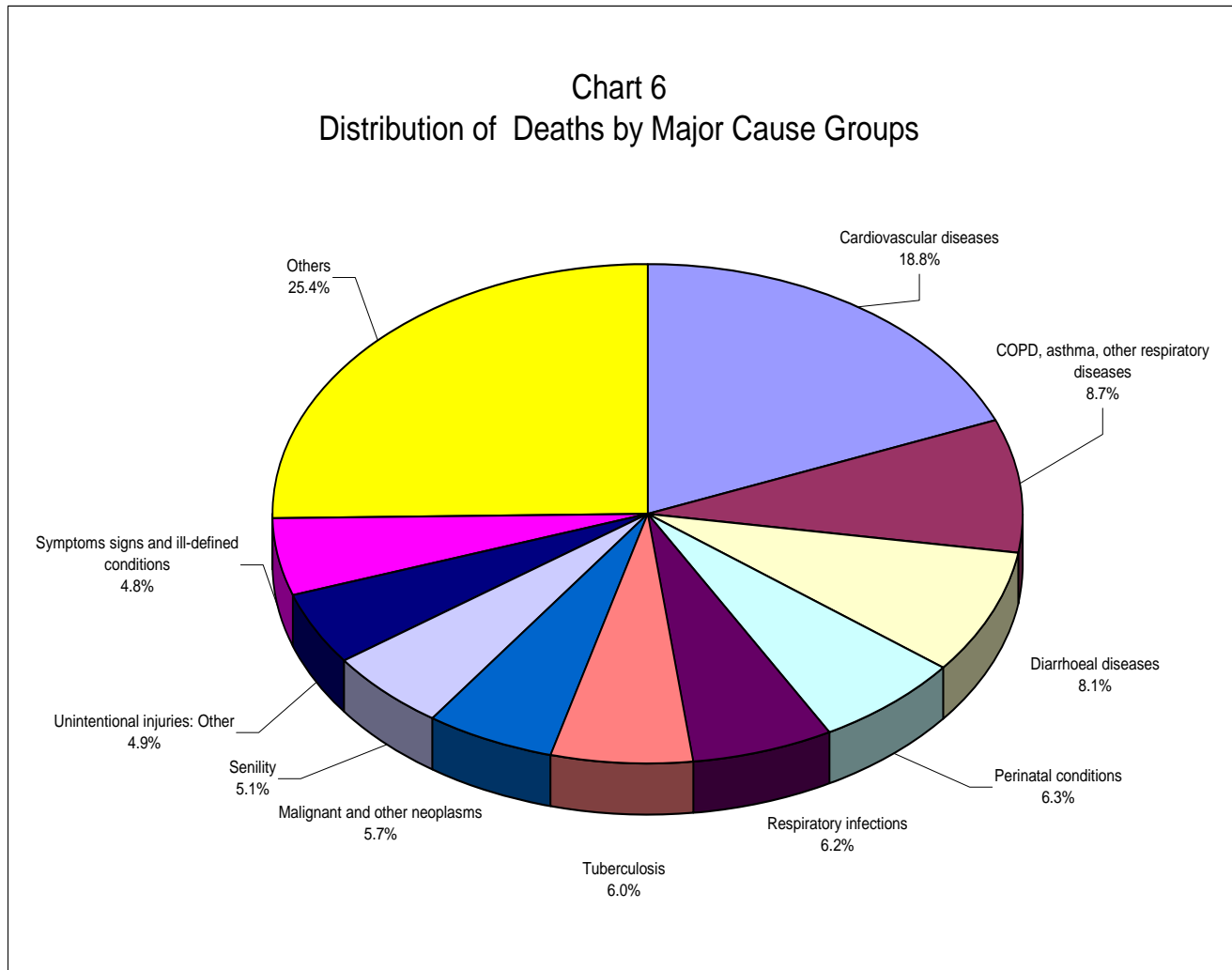
Age Group	Number of Deaths (% Deaths)					
	Rural Area			Urban Area		
	Male	Female	Person	Male	Female	Person
0 - 1	7367 (14.2)	6627 (15.5)	13994 (14.8)	788 (7.2)	668 (8.1)	1456 (7.6)
1 - 4	2520 (4.9)	3182 (7.4)	5702 (6.0)	209 (1.9)	297 (3.6)	506 (2.6)
0 - 4	9,887 (19.1)	9,809 (22.9)	19,696 (20.8)	997 (9.2)	965 (11.7)	1,962 (10.2)
5 -14	1,526 (2.9)	1,566 (3.7)	3,092 (3.3)	169 (1.6)	170 (2.1)	339 (1.8)
15 - 24	2,285 (4.4)	2,485 (5.8)	4,770 (5.0)	423 (3.9)	366 (4.4)	789 (4.1)
25 - 34	2,840 (5.5)	2,121 (5.0)	4,961 (5.2)	715 (6.6)	417 (5.0)	1,132 (5.9)
35 - 44	3,589 (6.9)	2,158 (5.0)	5,747 (6.1)	935 (8.6)	433 (5.2)	1,368 (7.1)
45 - 54	5,088 (9.8)	2,710 (6.3)	7,798 (8.2)	1,432 (13.1)	656 (7.9)	2,088 (10.9)
55 - 69	12,441 (24.0)	9,146 (21.4)	21,587 (22.8)	3,001 (27.6)	2,022 (24.4)	5,023 (26.2)
70 +	14,105 (27.3)	12,770 (29.9)	26,875 (28.4)	3,220 (29.6)	3,245 (39.2)	6,465 (33.7)
Total	51,761 (100.0)	42,765 (100.0)	94,526 (100.0)	10,892 (100.0)	8,274 (100.0)	19,166 (100.0)

2.7 The Statements 5.A to 5.C present the details of top 10 leading causes of death overall in the country by EAG states and Assam vs. the Other States and by rural and urban areas. Overall, the leading cause of death is cardiovascular disease (19%), followed by respiratory diseases (9% which include chronic obstructive pulmonary disease or COPD, asthma, other respiratory diseases), Diarrheal diseases (8%), perinatal conditions (6%), respiratory infections such as acute pneumonia (6.2%), tuberculosis (6%), malignant and other neoplasms (5.7%), and unintentional injuries: Other(4.9%). Senility and Symptoms, signs and ill-defined conditions constitute 5% each, much of which is concentrated at the ages 70 or above. Notable differences by gender are seen with Diarrheal diseases accounting for 10% of female deaths against 7% for males, tuberculosis accounting for 5% female deaths in comparison to 7% for males, and cardiovascular diseases accounting for 17% female deaths versus 20% for males. Higher proportion of deaths owing to senility is observed among the females (7%) than the males (4%).

Statement 5.A – Top 10 causes of death in India (all ages as %): SSD, 2001-2003

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	20.3	16.9	18.8
2	COPD, asthma, other respiratory diseases	9.3	8.0	8.7
3	Diarrheal diseases	6.7	9.9	8.1
4	Perinatal conditions	6.4	6.2	6.3
5	Respiratory infections	5.4	7.1	6.2
6	Tuberculosis	7.1	4.7	6.0
7	Malignant and other neoplasms	5.4	6.0	5.7
8	Senility	4.0	6.5	5.1
9	Unintentional injuries: Other	5.2	4.5	4.9
10	Symptoms signs and ill-defined conditions	4.6	5.0	4.8

Chart 6 presents the distribution of deaths by major cause groups.



2.8 The top 10 causes of deaths are common in the EAG states and Assam and in Other States, except for other infectious and parasitic diseases, malaria, malignant and other neoplasms and senility. However, their relative order varies. The proportion of deaths due to cardiovascular disease is nearly twice in the Other States than in the EAG states and Assam. On the contrary, the proportion of deaths due to respiratory infections, perinatal conditions and Diarrheal diseases in the EAG states and Assam is almost double that of the Other States. Malaria accounts for over 4% of deaths in the EAG states and Assam, but less than 1% in the Other States. Unintentional injuries constitute about 5% of deaths in both the categories.

Statement 5.B – Top 10 causes of death in India (all ages as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
EAG States & Assam				
1	Cardiovascular diseases	14.3	11.4	12.9
2	Diarrheal diseases	9.5	12.9	11.0
3	Respiratory infections	7.9	9.9	8.8
4	COPD, asthma, other respiratory diseases	9.5	7.9	8.7
5	Perinatal conditions	8.3	7.7	8.0
6	Tuberculosis	8.1	5.2	6.7
7	Other infectious and parasitic diseases	5.1	6.1	5.6
8	Symptoms signs and ill-defined conditions	4.8	4.8	4.8
9	Unintentional injuries: Other	4.9	4.2	4.6
10	Malaria	4.1	5.0	4.5
Other States				
1	Cardiovascular diseases	25.2	22.2	23.9
2	COPD, asthma, other respiratory diseases	9.1	8.1	8.7
3	Malignant and other neoplasms	6.7	7.7	7.1
4	Senility	4.5	7.9	6.0
5	Diarrheal diseases	4.4	7.2	5.6
6	Tuberculosis	6.3	4.1	5.3
7	Unintentional injuries: Other	5.4	4.9	5.2
8	Perinatal conditions	4.9	4.7	4.8
9	Symptoms signs and ill-defined conditions	4.4	5.2	4.7
10	Respiratory infections	3.4	4.5	3.9

2.9 The top 10 causes of deaths in the rural and the urban areas are common except for deaths due to perinatal conditions and digestive diseases. However, their relative order varies. Cardiovascular diseases accounts for 29% of the deaths in the urban areas vis-à-vis 17% in the rural areas. Perinatal and Diarrheal diseases cause higher proportion of deaths in the rural areas (7% and 9% respectively) than the urban areas (3% and 5% respectively). The proportion of deaths due to cancer is lower in the rural areas (5%) than in the urban areas (8%). Higher proportion of deaths due to Diarrheal diseases, senility, cancer, respiratory infections and symptoms signs and ill-defined conditions are observed among the females than males in the rural as well as in the urban areas.

Statement 5.C – Top 10 causes of death in India (all ages as %): SSD, 2001-2003; Rural & Urban Areas

Rank	Cause of Death	Male	Female	Person
	Rural Area			
1	Cardiovascular diseases	18.2	15.1	16.8
2	COPD, asthma, other respiratory diseases	9.5	8.3	9.0
3	Diarrheal diseases	7.3	10.7	8.8
4	Perinatal conditions	6.9	6.7	6.8
5	Respiratory infections	6.0	7.6	6.7
6	Tuberculosis	7.3	4.7	6.1
7	Malignant and other neoplasms	5.0	5.6	5.2
8	Senility	4.1	6.3	5.1
9	Unintentional injuries: Other	5.4	4.5	5.0
10	Symptoms signs and ill-defined conditions	4.7	5.1	4.9
	Urban Area			
1	Cardiovascular diseases	30.3	26.3	28.6
2	Malignant and other neoplasms	7.5	8.5	7.9
3	COPD, asthma, other respiratory diseases	8.1	6.7	7.5
4	Tuberculosis	5.9	4.5	5.3
5	Senility	3.4	7.4	5.1
6	Diarrheal diseases	3.9	6.1	4.8
7	Unintentional injuries: Other	4.1	4.7	4.4
8	Symptoms signs and ill-defined conditions	4.0	4.6	4.3
9	Digestive diseases	5.0	2.5	3.9
10	Respiratory infections	3.0	4.5	3.7

CHAPTER – 3

MORTALITY PATTERNS IN SPECIFIC AGE-GROUPS

3.1 This chapter reviews the mortality pattern in different age groups by cause groups, stratified by gender, EAG states and Assam versus Other states, and rural versus urban areas. There are four different age groups namely Child mortality (age 0-4), Adolescent and young adult mortality (age 5 to 14 and age 15 to 24), Adult mortality in middle age (age 25-69) and Adult mortality in old age (age 70 and older). The mortality in age group 0-4 has been further analysed for age below 1 and ages 1 to 4 to provide an insight into the specific causes of death which need attention in these two important age groups.

CHILD MORTALITY (ages 0 to 4):

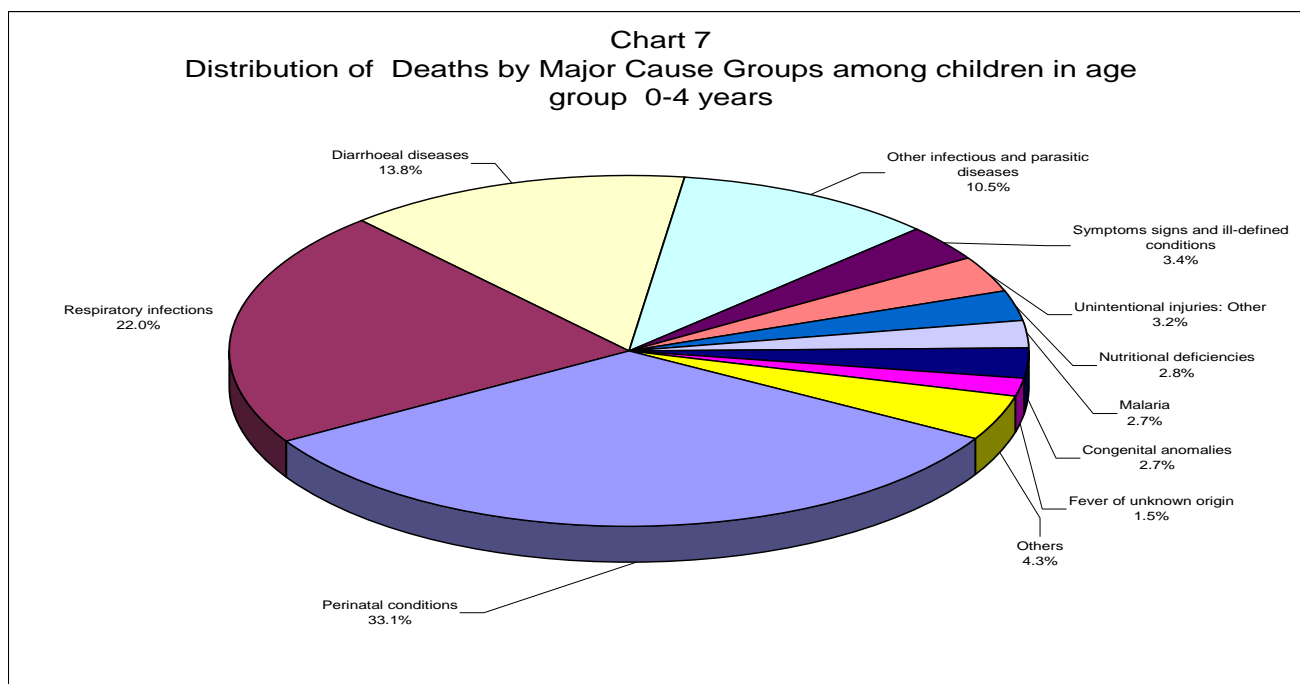
3.1.1 Currently, about 1.5 million child deaths occur every year in the country of which three fifths are accounted for by the EAG states and Assam. The Millennium Development Goals (MDG) have a target of reducing child mortality in the country from 123 per 1000 live births in 1990 to 41 per 1000 live births by 2015, thus requiring an annual average decline of 4.3%.

3.1.2 Overall, this age group accounts for about 19% of the total deaths in the country comprising 17% of the total male deaths and 21% of the total female deaths. Statement 6.A below gives the top ten causes of death for childhood mortality in the age group. Perinatal conditions have the highest share of 33% of deaths, followed by respiratory infections (22%), Diarrheal diseases (14%) and other infectious and parasitic diseases (10.5%). All of them together account for nearly 80% of the child deaths. Symptoms, signs and ill-defined conditions (3.4%), unintentional injuries: other (3.2%), nutritional deficiencies (2.8%), malaria (2.7%), congenital anomalies (2.7%), and fever of unknown origin (1.5%) are the other important causes of death appearing in the same order. Perinatal conditions cover specific risks for the new born and constitute a higher proportion of male deaths, majority of which are in the first week of life. Congenital anomalies, unintentional injuries (mostly falls) and symptoms signs and ill defined conditions also cause higher proportion of deaths among the males than females. The chances of misclassification of deaths due to malaria and fever of unknown origin with other infections are not ruled out.

Statement 6.A – Top 10 causes of death in India (ages 0 to 4 as %): SSD, 2001-2003

Rank	Cause of Death	Male	Female	Person
1	Perinatal conditions	36.9	29.2	33.1
2	Respiratory infections	20.7	23.3	22.0
3	Diarrheal diseases	12.3	15.3	13.8
4	Other infectious and parasitic diseases	9.8	11.2	10.5
5	Symptoms signs and ill-defined conditions	3.5	3.4	3.4
6	Unintentional injuries: Other	3.4	2.9	3.2
7	Nutritional deficiencies	2.4	3.2	2.8
8	Malaria	2.4	3.0	2.7
9	Congenital anomalies	3.0	2.3	2.7
10	Fever of unknown origin	1.5	1.6	1.5

Chart 7 depicts the distribution of deaths by major cause groups among the children in age group 0-4.



3.1.3 Statement 6.B below shows the variation in causes of child mortality as a proportion of all child deaths by EAG states and Assam and the Other States. This age group constitutes about 27% of the total deaths in EAG states and Assam and 12% in the Other States. However, the leading ten causes of death in both the category of states are same, but their relative ranking varies. Perinatal conditions, respiratory infections, Diarrheal diseases and other infectious and parasitic diseases, which are the first four causes of death in both the groups, together accounts for 81% deaths in EAG states and Assam and 75% in the Other States.

3.1.4 The mortality from malaria (3.3%), however, is more than twice in proportion in EAG states and Assam if compared to Other States (1.5%). The congenital anomalies causes three times more deaths in the Other States (4.8%) via-a-vis those in the EAG states and Assam (1.6%). Nutritional deficiencies as a cause of death have a higher count in EAG states and Assam (3.2%) than in the Other States (2%). The deaths from acute respiratory infections or Diarrheal disease after the neonatal period are more or less common across the above two categories, and more pre-dominant among females than males.

Statement 6.B – Top 10 causes of death in India (ages 0 to 4 as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
	EAG States & Assam			
1	Perinatal conditions	33.3	26.5	29.9
2	Respiratory infections	23.1	25.6	24.4
3	Diarrheal diseases	13.2	16.3	14.8
4	Other infectious and parasitic diseases	11.8	12.8	12.3
5	Malaria	2.9	3.7	3.3
6	Nutritional deficiencies	2.7	3.8	3.2
7	Symptoms signs and ill-defined conditions	3.4	2.7	3.1
8	Unintentional injuries: Other	2.8	2.3	2.6
9	Congenital anomalies	1.9	1.2	1.6
10	Fever of unknown origin	1.3	1.2	1.3
	Other States			
1	Perinatal conditions	43.4	34.6	39.2
2	Respiratory infections	16.3	18.5	17.4
3	Diarrheal diseases	10.5	13.2	11.8
4	Other infectious and parasitic diseases	6.3	8.0	7.1
5	Congenital anomalies	5.1	4.5	4.8
6	Unintentional injuries: Other	4.6	4.0	4.3
7	Symptoms signs and ill-defined conditions	3.7	4.7	4.2
8	Nutritional deficiencies	1.8	2.2	2.0
9	Fever of unknown origin	1.7	2.4	2.0
10	Malaria	1.3	1.7	1.5

3.1.5 Statement 6.C below shows the major causes of death for ages 0-4 in the country by rural and urban areas. In this age group, there are 21% and 10% of the deaths in rural areas and urban areas respectively of the country. The overall pattern of leading causes of death is similar in the case of EAG states and Assam and in the Other States. The top ten causes of death also remain the same with the proportion showing a narrow gap under both the categories. However, incidence of malaria deaths in rural areas (2.8%) is higher than of the urban areas (1.2%) whereas the incidence of deaths due to congenital anomalies is more than double in the urban areas.

Statement 6.C – Top 10 causes of death in India (ages 0 to 4 as %): SSD, 2001-2003; Rural & Urban Areas

Rank	Cause of Death	Male	Female	Person
	Rural Area			
1	Perinatal conditions	36.3	29.3	32.8
2	Respiratory infections	21.1	23.4	22.2
3	Diarrheal diseases	12.4	15.3	13.8
4	Other infectious and parasitic diseases	10.0	11.4	10.7
5	Symptoms signs and ill-defined conditions	3.5	3.4	3.4
6	Unintentional injuries: Other	3.5	2.8	3.2
7	Malaria	2.5	3.2	2.8
8	Nutritional deficiencies	2.4	3.2	2.8
9	Congenital anomalies	2.7	2.2	2.4
10	Fever of unknown origin	1.5	1.6	1.6
	Urban Area			
1	Perinatal conditions	42.5	28.7	35.7
2	Respiratory infections	17.1	22.0	19.5
3	Diarrheal diseases	10.9	15.5	13.2
4	Other infectious and parasitic diseases	8.3	9.3	8.8
5	Congenital anomalies	6.5	3.8	5.2
6	Symptoms signs and ill-defined conditions	3.3	3.8	3.6
7	Nutritional deficiencies	2.6	3.6	3.1
8	Unintentional injuries: Other	2.6	3.5	3.1
9	Malaria	0.8	1.7	1.2
10	Fever of unknown origin	1.0	1.5	1.2

INFANT MORTALITY (age below 1):

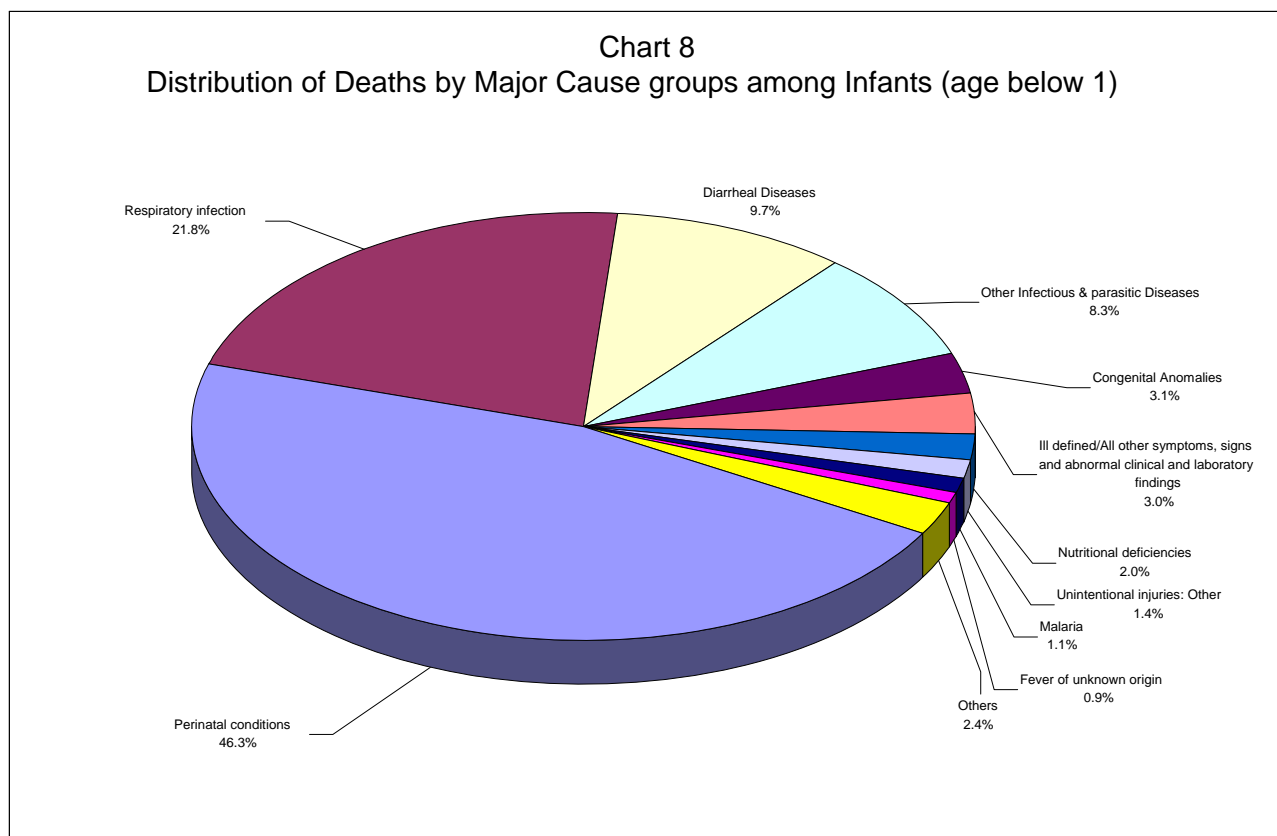
3.1.6 For better insight, analysis has been further done of infant mortality (age below 1) and child mortality (ages 1-4). According to 2007 (SRS), the rate of infant mortality in the country is currently 55 per 1000 live births. Of all the deaths, infant deaths constitute about 14% (i.e. every seventh death), with the share of male and female infant deaths to the corresponding total deaths being 13% and 14% respectively. In the age-group 0 to 4, 71% of the total deaths occur at age below one (1) year.

3.1.7 Statement 7.A below shows the ten major causes of death for infants. Perinatal conditions (46%), respiratory infections (22%), Diarrheal diseases (10%) and other infectious and parasitic diseases (8%) are the main killer causes among infants. The proportion of deaths due to perinatal conditions and congenital anomalies is higher among the males.

Statement 7.A-Top 10 causes of death in India (age below 1 as %): SSD, 2001-2003; All India

Rank	Cause of Death	Male	Female	Person
1	Perinatal conditions	49.2	43.1	46.3
2	Respiratory infection	20.5	23.3	21.8
3	Diarrheal Diseases	9.0	10.6	9.7
4	Other infectious and parasitic diseases	7.9	8.8	8.3
5	Congenital anomalies	3.4	2.8	3.1
6	Symptoms signs and ill defined conditions	2.9	3.2	3.0
7	Nutritional deficiencies	1.8	2.3	2.0
8	Unintentional injuries: Other	1.5	1.3	1.4
9	Malaria	0.9	1.3	1.1
10	Fever of unknown origin	0.9	0.9	0.9

Chart 8 illustrates the distribution of deaths by major cause groups among infants (age below 1).



3.1.8 Statement 7.B below shows the variation in causes of infant mortality (age below 1) as a proportion of all infant deaths by EAG states and Assam and other states. Infant deaths accounts for about 19% of the total deaths in EAG states and Assam and 9% in the Other States. Perinatal conditions, the top cause in both the category of states, accounts for 10% more deaths in the Other States if compared to the EAG states and Assam. However, respiratory infections, Diarrheal diseases and other infectious and parasitic diseases together account for about 45% deaths in EAG states and Assam vis-à-vis 30% in the Other States. Deaths due to nutritional deficiencies and malaria are also more prevalent in EAG states and Assam. In contrast, perinatal conditions and congenital anomalies dominate in the Other States. The proportion of males dying from perinatal conditions, congenital anomalies and unintentional injuries is higher than females in both the categories.

Statement 7.B-Top 10 causes of death in India (age below 1 as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
EAG States & Assam				
1	Perinatal conditions	45.4	40.1	42.9
2	Respiratory infection	23.0	26.1	24.5
3	Diarrheal Diseases	9.9	10.9	10.4
4	Other infectious and parasitic diseases	9.9	10.7	10.3
5	Symptoms signs and ill defined conditions	2.8	2.5	2.7
6	Nutritional deficiencies	1.9	2.7	2.3
7	Congenital anomalies	2.2	1.5	1.9
8	Malaria	1.1	1.6	1.3
9	Unintentional injuries: Other	1.3	1.1	1.2
10	Fever of unknown origin	0.8	0.6	0.7
Other States				
1	Perinatal conditions	55.7	48.7	52.5
2	Respiratory infection	16.0	18.0	16.9
3	Diarrheal Diseases	7.5	9.9	8.6
4	Congenital anomalies	5.5	5.3	5.4
5	Other infectious and parasitic diseases	4.5	5.1	4.8
6	Symptoms signs and ill defined conditions	3.0	4.4	3.6
7	Unintentional injuries: Other	1.8	1.7	1.8
8	Nutritional deficiencies	1.5	1.6	1.6
9	Fever of unknown origin	1.1	1.3	1.2
10	Malaria	0.7	0.8	0.8

3.1.9 Statement 7.C below shows the major causes of death for age below 1 by rural and urban areas in the country. About 15% of the total deaths in rural areas and 8% in the urban areas pertain to infants. The top ten causes of death are common in rural as well as urban areas, with striking overall similarity in patterns as observed in case of ages 0 to 4. Perinatal conditions, respiratory infections, Diarrheal diseases and other infectious & parasitic diseases clubbed together account for more than 80% infant deaths in rural areas as well as in urban areas. The proportion of infant deaths due to malaria is more than twice in rural areas (1.2%) than urban areas (0.5%).

**Statement 7.C-Top 10 causes of death in India (age below 1 as %): SSD, 2001-2003;
Rural and Urban Area**

Rank	Cause of Death	Male	Female	Person
Rural Area				
1	Perinatal conditions	48.7	43.3	46.1
2	Respiratory infection	20.9	23.5	22.1
3	Diarrheal Diseases	9.1	10.5	9.8
4	Other infectious and parasitic diseases	8.3	8.9	8.6
5	Symptoms signs and ill defined conditions	2.9	3.1	3.0
6	Congenital anomalies	3.0	2.7	2.9
7	Nutritional deficiencies	1.7	2.2	2.0
8	Unintentional injuries: Other	1.5	1.2	1.4
9	Malaria	1.0	1.4	1.2
10	Fever of unknown origin	0.9	0.9	0.9
Urban Area				
1	Perinatal conditions	53.8	41.5	48.1
2	Respiratory infection	16.5	21.0	18.5
3	Diarrheal Diseases	8.1	11.1	9.5
4	Other infectious and parasitic diseases	5.1	7.5	6.2
5	Congenital anomalies	7.1	4.5	5.9
6	Symptoms signs and ill defined conditions	3.2	4.0	3.6
7	Nutritional deficiencies	2.4	3.3	2.8
8	Unintentional injuries: Other	1.1	2.2	1.6
9	Fever of unknown origin	0.5	0.7	0.6
10	Malaria	0.4	0.6	0.5

3.1.10 The analysis of causes of death among infants has brought out perinatal conditions as the dominant cause accounting about half of the deaths in all the three classification of states. Dis-aggregation of perinatal deaths by its sub-causes shows that out of the total 7162 perinatal deaths, 56% are males and 44% females. Among the sub-causes, deaths due to pre-mature birth or slow foetal growth are the maximum (39%), 21% for males and 18% for females. This is followed by other causes including haemolytic disease (31%) with 17% for males and 14% for females, asphyxia (26%) with 15% for males and 11% for females, other perinatal jaundice (3%) with 2% for males and 1% for females and birth trauma (1%) with 0.6% for males and 0.4% for females. Nearly 59% of the total perinatal

deaths occur in EAG states and Assam. The overall proportion of sub-causes in rural and urban areas as well as in EAG states and Assam and Other States remains the same as is observed for the country.

3.1.11 Neonatal (first month) deaths constitutes about two-third of total infant deaths with 56% male and 44% female. The prominent causes of death among neonates are: perinatal conditions (71%), respiratory infections (15%), other infectious and parasitic diseases (6%), Diarrheal diseases (3%) and congenital anomalies (3%). The proportion of female deaths is higher for all causes of death except perinatal conditions and congenital anomalies.

CHILD MORTALITY (ages 1 to 4):

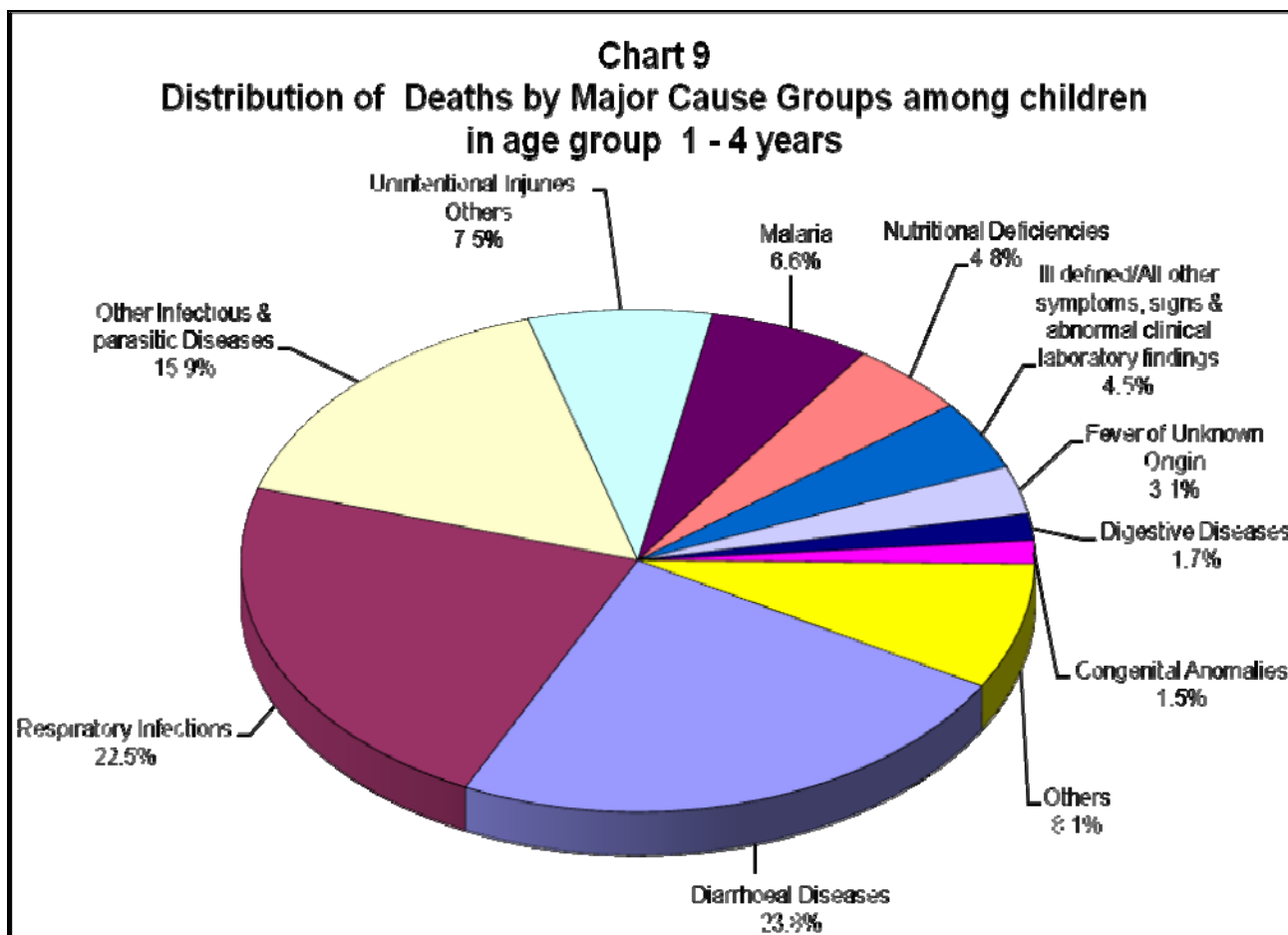
3.1.12 Nearly 6% of the total deaths occur among children in the age group 1-4; 4% and 7% respectively of the total male and female deaths. The statement 8.A below shows the ten major causes of death for child mortality at ages 1-4. Diarrheal diseases (24%) are the leading cause of death, followed by respiratory infections (23%) and other infectious & parasitic diseases (16%). Among other prominent causes for death, unintentional injuries: others (7.5%), malaria (6.6%) and nutritional deficiencies (5%) are noticeable.

Statement 8.A-Top 10 causes of death in India (ages 1-4 as %): SSD, 2001-2003;

All India

Rank	Cause of Death	Male	Female	Person
1	Diarrheal Diseases	22.0	25.2	23.8
2	Respiratory Infections	21.4	23.3	22.5
3	Other infectious and parasitic diseases	15.5	16.2	15.9
4	Unintentional injuries: Other	9.3	6.2	7.5
5	Malaria	6.6	6.6	6.6
6	Nutritional Deficiencies	4.3	5.1	4.8
7	Symptoms signs and ill defined conditions	5.3	3.9	4.5
8	Fever of Unknown Origin	3.1	3.1	3.1
9	Digestive Diseases	1.6	1.8	1.7
10	Congenital Anomalies	1.9	1.3	1.5

Chart 9 displays the distribution of deaths by major cause groups among children in age group 1 to 4 years.



3.1.13 Statement 8.B below shows the variation in causes of child mortality at ages 1-4 as a proportion of deaths by EAG states and Assam and Other States. The share of this age group in the total deaths in the EAG states and Assam and Other States is 8% and 3% respectively. The leading causes of death remains the same in both the category of states except for tuberculosis featuring as a cause in EAG states and Assam and congenital anomalies as another cause in the Other States. However, the relative ranking of causes of death varies. Other than the mortality from Diarrheal diseases, which is significant in both the groups, respiratory infections, other infectious and parasitic diseases, deaths due to malaria and nutritional deficiencies are more acutely prevalent in EAG states and Assam than in the Other States. The proportion of females dying from Diarrheal diseases, respiratory infections, nutritional deficiencies, and digestive diseases is higher than that of males in both the group of states.

Statement 8.B-Top 10 causes of death in India (ages 1-4 as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
EAG States & Assam				
1	Diarrheal Diseases	22.5	26.8	25.0
2	Respiratory Infections	23.4	24.8	24.2
3	Other infectious and parasitic diseases	16.9	16.8	16.8
4	Malaria	8.1	7.7	7.8
5	Unintentional injuries: Other	7.0	4.7	5.7
6	Nutritional Deficiencies	4.9	5.8	5.4
7	Symptoms signs and ill defined conditions	5.0	3.2	4.0
8	Fever of Unknown Origin	2.8	2.3	2.5
9	Digestive Diseases	1.3	1.5	1.4
10	Tuberculosis	1.0	1.4	1.2
Other States				
1	Diarrheal Diseases	20.8	21.3	21.1
2	Respiratory Infections	17.1	19.7	18.5
3	Other infectious and parasitic diseases	12.4	15.0	13.8
4	Unintentional injuries: Other	14.3	9.6	11.7
5	Symptoms signs and ill defined conditions	6.1	5.6	5.8
6	Fever of Unknown Origin	3.9	5.1	4.5
7	Malaria	3.4	3.9	3.7
8	Nutritional Deficiencies	2.8	3.7	3.3
9	Congenital Anomalies	3.9	2.7	3.2
10	Digestive Diseases	2.3	2.5	2.4

3.1.14 Statement 8.C below shows the variation in causes of child mortality at ages 1-4 by rural and urban areas in the country. About 6% of the total deaths in the rural areas and 3% in the urban areas are of children in the age group 1 to 4. The overall pattern of the leading causes of death is broadly similar in the EAG states and Assam and in the Other States. However, respiratory infections as a cause of death, is more fatal in urban areas. The proportion of females dying from respiratory infections is more than males in both the areas. The incidence of deaths due to malaria is double in rural areas if compared with that of urban areas, a trend seen also in infant deaths.

**Statement 8.C-Top 10 causes of death in India (ages 1-4 as %): SSD, 2001-2003;
Rural and Urban Areas**

Rank	Cause of Death	Male	Female	Person
Rural Area				
1	Diarrheal Diseases	20.8	21.5	21.2
2	Respiratory Infections	16.2	18.3	17.3
3	Other infectious and parasitic diseases	12.0	15.2	13.8
4	Unintentional injuries: Other	14.9	9.9	12.2
5	Symptoms signs and ill defined conditions	6.5	6.1	6.3
6	Fever of Unknown Origin	4.2	5.3	4.8
7	Malaria	3.8	4.2	4.0
8	Nutritional Deficiencies	2.7	3.9	3.3
9	Congenital Anomalies	3.5	2.5	3.0
10	Neuro-Psychiatric Conditions	2.6	2.1	2.3
Urban Area				
1	Respiratory Infections	24.4	29.8	27.6
2	Diarrheal Diseases	21.1	19.8	20.4
3	Other infectious and parasitic diseases	15.6	13.7	14.5
4	Unintentional injuries: Other	8.9	7.6	8.1
5	Congenital Anomalies	6.7	3.8	5.0
6	Digestive Diseases	3.3	3.8	3.6
7	Malignant & Other Neoplasms	2.2	3.8	3.2
8	Fever of Unknown Origin	1.1	3.8	2.7
9	Nutritional Deficiencies	3.3	2.3	2.7
10	Symptoms signs and ill defined conditions	2.2	2.3	2.3

ADOLESCENT AND YOUNG ADULT MORTALITY (ages 5 to 14 and ages 15 to 24)

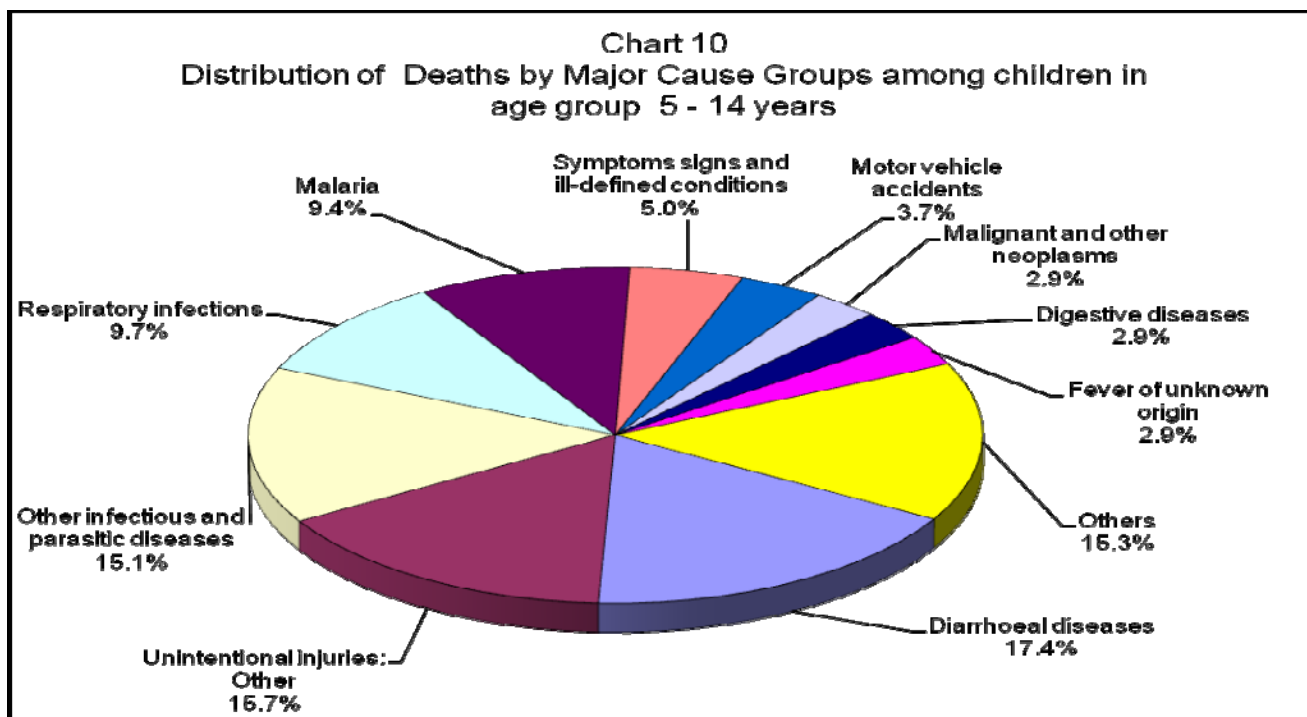
3.2.1 This section reviews the causes of death at ages 5-14, and 15-24 in the country. Statement 9.A below shows the leading causes of death at ages 5-14, which is generally regarded as a period of lower mortality than that at ages 0-4 years. The overall contribution of this age group to the total deaths is 3%, with 2.7% of male deaths and 3.4% of female deaths. The top three causes of death are Diarrheal diseases (17%), unintentional injuries: other (16%), other infectious and parasitic diseases (15%). These together accounts for every second death in this age group. A much higher proportion of deaths due to unintentional injuries: other vis-à-vis in age group 0-4, should be a matter of concern. The

respiratory infections (10%), malaria (9%), ill-defined conditions (5%), motor vehicle accidents (4%), cancers (3%), digestive diseases (3%), and fever of unknown origin (3%) are other prominent causes of death. The females have a higher proportion of deaths from Diarrheal diseases, other infectious and parasitic diseases, respiratory infections, and malaria. On the contrary, the males have a higher proportion from motor vehicle accidents as well as unintentional injuries: others, malignant and other neoplasms, digestive diseases, and ill-defined conditions.

Statement 9.A – Top 10 causes of death in India (ages 5 to 14 as %): SSD, 2001-2003; All India

Rank	Cause of Death	Male	Female	Person
1	Diarrheal diseases	15.2	19.6	17.4
2	Unintentional injuries: Other	19.4	12.0	15.7
3	Other infectious and parasitic diseases	13.5	16.7	15.1
4	Respiratory infections	8.4	11.1	9.7
5	Malaria	8.1	10.7	9.4
6	Symptoms signs and ill-defined conditions	5.4	4.6	5.0
7	Motor vehicle accidents	5.3	2.1	3.7
8	Malignant and other neoplasms	3.8	2.0	2.9
9	Digestive diseases	2.9	2.8	2.9
10	Fever of unknown origin	2.5	3.3	2.9

Chart 10 illustrates the distribution of deaths among children aged 5-14 by major cause groups.



3.2.2 Statement 9.B below shows the variation in causes of mortality at ages 5-14 as a proportion of deaths by EAG states and Assam and other states. Nearly 4% and 2% of the

total deaths in the EAG states and Assam and the Other States occur in this age group respectively. Nearly 72% of the deaths in the EAG states and Assam are caused due to Diarrheal diseases, other infectious & parasitic diseases, unintentional injuries: other, malaria and respiratory infections against 58% in the Other States. Unintentional injuries along with motor vehicle accidents account for every fourth death in the Other States and every sixth death in EAG states and Assam. Diarrheal diseases, other infectious and parasitic diseases, malaria, respiratory infections and fever of unknown origin as causes of death dominate among females than the males in both the category of states. On the other hand, Unintentional injuries, motor vehicle accidents, cancer and congenital anomalies account for more deaths among males.

Statement 9.B – Top 10 causes of death in India (ages 5 to 14 as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
EAG States & Assam				
1	Diarrheal diseases	17.3	20.6	19.0
2	Other infectious and parasitic diseases	15.1	17.8	16.5
3	Unintentional injuries: Other	17.1	11.0	13.9
4	Malaria	9.8	13.0	11.5
5	Respiratory infections	10.1	12.3	11.2
6	Symptoms signs and ill-defined conditions	5.7	3.9	4.7
7	Motor vehicle accidents	4.7	1.5	3.0
8	Digestive diseases	3.0	2.7	2.9
9	Tuberculosis	2.1	3.4	2.8
10	Fever of unknown origin	2.0	2.9	2.5
Other States				
1	Unintentional injuries: Other	23.3	14.1	18.9
2	Diarrheal diseases	11.6	17.6	14.5
3	Other infectious and parasitic diseases	10.6	14.4	12.4
4	Respiratory infections	5.5	8.6	7.0
5	Malaria	5.2	5.8	5.5
6	Symptoms signs and ill-defined conditions	5.0	6.0	5.5
7	Motor vehicle accidents	6.3	3.5	5.0
8	Malignant and other neoplasms	4.8	3.9	4.4
9	Fever of unknown origin	3.5	4.2	3.9
10	Congenital anomalies	4.0	3.2	3.6

3.2.3 Statement 9.C below shows the results for rural and urban areas in the country. The leading causes of death are common except that neuro-psychiatric conditions feature as a cause in rural area and intentional self-harm (suicide) in the urban area. Of the total deaths

due to intentional self-harm across all ages, about 2% of the deaths are in the age group with 3.2% in urban areas and are mostly concentrated in higher end ages (93% above 11 years). Though not a significant proportion, the onset of intentional self-harm as a cause of death in this age group, should be a cause of worry. A higher proportion of these deaths have occurred in the states of Andhra Pradesh (23%), Tamil Nadu (10%), Kerala (6%), Maharashtra (5%), and West Bengal (4%). These states together, account for about 46% of intentional self harm deaths reported at all the ages. The malaria deaths in rural areas are about 10% of the total deaths, compared to 6% in urban areas. The deaths from Neuro-psychiatric conditions account for 3% of the deaths in the rural areas. Nearly five times more deaths have been reported due to Malaria among females (10%) if compared to males (1.8%) in urban areas.

Statement 9.C – Top 10 causes of death in India (ages 5 to 14 as %): SSD, 2001-2003; Rural & Urban Areas

Rank	Cause of Death	Male	Female	Person
Rural Area				
1	Diarrheal diseases	14.9	19.9	17.4
2	Unintentional injuries: Other	19.6	12.0	15.8
3	Other infectious and parasitic diseases	13.6	17.1	15.4
4	Respiratory infections	8.7	11.0	9.9
5	Malaria	8.8	10.7	9.8
6	Symptoms signs and ill-defined conditions	5.2	4.6	4.9
7	Motor vehicle accidents	5.1	2.1	3.6
8	Fever of unknown origin	2.5	3.4	3.0
9	Malignant and other neoplasms	3.7	1.9	2.8
10	Neuro-psychiatric conditions	3.2	2.4	2.8
Urban Area				
1	Diarrheal diseases	17.8	17.1	17.4
2	Unintentional injuries: Other	17.8	11.8	14.7
3	Other infectious and parasitic diseases	11.8	12.9	12.4
4	Respiratory infections	5.3	11.2	8.3
5	Malaria	1.8	10.0	5.9
6	Symptoms signs and ill-defined conditions	7.7	4.1	5.9
7	Motor vehicle accidents	6.5	2.4	4.4
8	Malignant and other neoplasms	4.7	2.9	3.8
9	Digestive diseases	3.0	4.1	3.5
10	Intentional self-harm	3.0	3.5	3.2

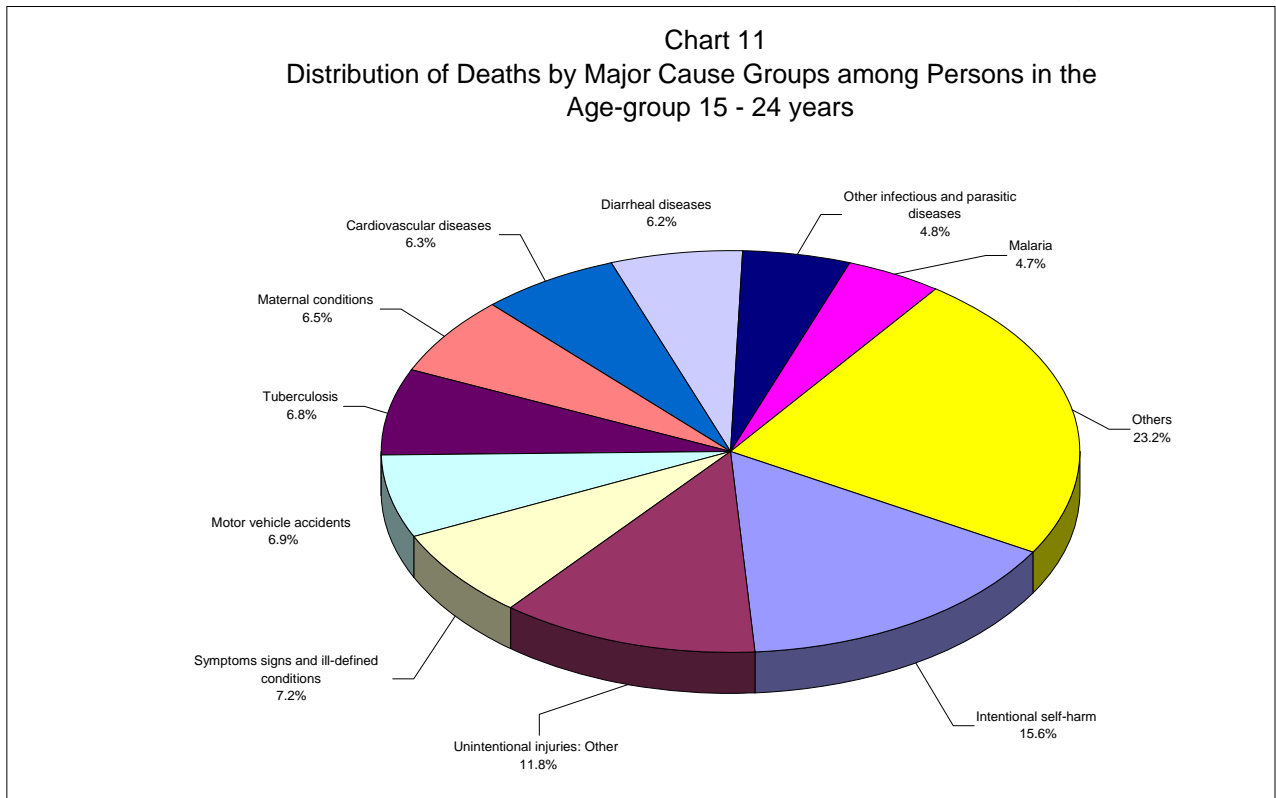
3.2.4 In the age group 15-24, death percentages are lower than that at the ages 0-4 years. This age group constitutes about 5% of the total deaths, accounting for 4.3% of total male deaths and 5.6% of the total female deaths. Mortality pattern in this age group is dominated

more by non-medical causes such as intentional self-harm, unintentional injuries and motor vehicle accidents which together account for every third death as can be seen from Statement 10.A below. Intentional self-harm (suicide) accounting for every sixth death in this age group, tops the list. About 35% of the total suicidal deaths belong to this age group, with maximum proportion of 26% reported at ages 20 and 21. The states of Kerala (41%), Tamil Nadu (40%), West Bengal (26.5%), Andhra Pradesh (25.6%), Karnataka(23%) and Maharashtra (19%) are reporting higher proportion of deaths due to intentional self-harm in this age group. Deaths from maternal conditions, is the second leading cause of death among females. The deaths due to cardiovascular diseases constitute a significant proportion of deaths (6%) in the age group suggesting an early on set of deaths. The proportion of male deaths due to motor vehicle accident is nearly six times more than females.

Statement 10.A – Top 10 causes of death in India (ages 15 to 24 as %): SSD, 2001-2003; All India

Rank	Cause of Death	Male	Female	Person
1	Intentional self-harm	14.3	16.9	15.6
2	Unintentional injuries: Other	14.7	9.1	11.8
3	Symptoms signs and ill-defined conditions	7.2	7.2	7.2
4	Motor vehicle accidents	12.4	1.7	6.9
5	Tuberculosis	6.0	7.5	6.8
6	Maternal conditions	-	12.6	6.5
7	Cardiovascular diseases	6.3	6.3	6.3
8	Diarrheal diseases	5.1	7.2	6.2
9	Other infectious and parasitic diseases	5.2	4.4	4.8
10	Malaria	4.8	4.6	4.7

Chart 11 exhibits the distribution of deaths at ages 15-24 by major cause groups.



3.2.5 Statement 10.B below shows that the pattern of causes of death in EAG states and Assam and in Other states are quite similar. The proportion of deaths from Intentional self-harm in Other states (21.2%) is, however, more than double than that of EAG states and Assam (9.7%). Similarly, cardiovascular diseases are more prevalent in the Other States. Against this, proportion of deaths from maternal causes and Tuberculosis is almost twice in EAG states and Assam in comparison to the Other States. Almost a similar pattern is observed in rural and urban areas (Statement 10.C). There are expectedly a higher proportion of maternal deaths in rural areas. It is notable that a higher proportion of females have died due to intentional self-harm than males across all the three categories of classification namely viz. all India, EAG states and Assam vs. Other states and Rural vs. Urban in this age group.

Statement 10.B – Top 10 causes of death in India (ages 15 to 24 as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
	EAG States & Assam			
1	Unintentional injuries: Other	12.2	9.1	10.5
2	Intentional self-harm	9.2	10.1	9.7
3	Maternal conditions	-	16.5	9.1
4	Tuberculosis	8.9	9.0	9.0
5	Symptoms signs and ill-defined conditions	8.7	7.9	8.2
6	Diarrheal diseases	7.0	8.7	7.9
7	Malaria	7.0	6.9	6.9
8	Motor vehicle accidents	11.7	1.0	5.8
9	Other infectious and parasitic diseases	6.7	4.8	5.7
10	Cardiovascular diseases	5.2	5.4	5.3
	Other States			
1	Intentional self-harm	18.3	24.2	21.2
2	Unintentional injuries: Other	16.7	9.1	13.1
3	Motor vehicle accidents	13.1	2.5	8.0
4	Cardiovascular diseases	7.2	7.3	7.2
5	Symptoms signs and ill-defined conditions	6.1	6.5	6.3
6	Malignant and other neoplasms	5.1	5.4	5.2
7	Tuberculosis	3.7	5.9	4.8
8	Diarrheal diseases	3.6	5.6	4.6
9	Maternal conditions	-	8.5	4.1
10	Other infectious and parasitic diseases	4.1	4.0	4.0

Statement 10.C - Top 10 causes of death in India (ages 15 to 24 as %): SSD, 2001-2003; Rural & Urban Areas

Rank	Cause of Death	Male	Female	Person
	Rural India			
1	Intentional self-harm	14.6	17.3	16.0
2	Unintentional injuries: Other	15.1	9.1	11.9
3	Symptoms signs and ill-defined conditions	7.4	6.8	7.0
4	Maternal conditions	-	13.3	6.9
5	Diarrheal diseases	5.7	7.6	6.7
6	Tuberculosis	6.0	7.2	6.6
7	Cardiovascular diseases	5.8	6.4	6.1
8	Motor vehicle accidents	11.2	1.4	6.1
9	Malaria	5.1	4.7	4.9
10	Other infectious and parasitic diseases	5.4	4.5	4.9
	Urban India			
1	Intentional self-harm	12.3	13.9	13.1
2	Motor vehicle accidents	18.9	3.6	11.8
3	Unintentional injuries: Other	12.8	9.3	11.2
4	Symptoms signs and ill-defined conditions	6.6	10.4	8.4
5	Tuberculosis	6.4	10.1	8.1
6	Cardiovascular diseases	9.2	5.7	7.6
7	Malignant and other neoplasms	4.5	6.3	5.3
8	Other infectious and parasitic diseases	4.5	4.1	4.3
9	Maternal conditions	-	7.9	3.7
10	Malaria	3.1	4.1	3.5

ADULT MORTALITY IN MIDDLE AGE (ages 25 to 69)

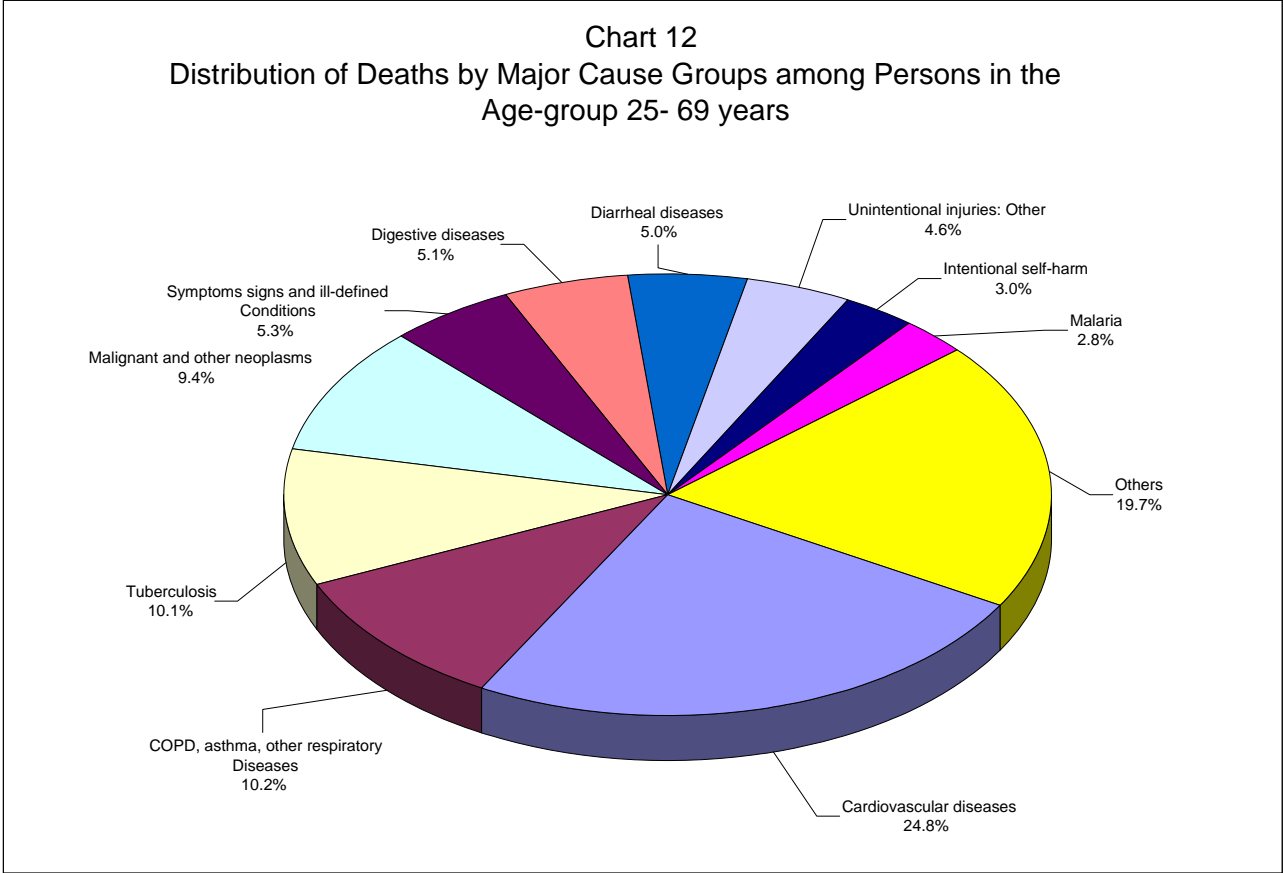
3.3.1 This section reviews the causes of death among adults in the age group 25-69 years in the country. The mortality rate rises sharply during the ages 25-69. Statement 11.A shows the top 10 causes of death at ages 25-69. The leading causes of death in this age group are cardiovascular diseases (25%), COPD, asthma, other respiratory diseases (10%), tuberculosis (10%), malignant and other neoplasms (9%), ill-defined conditions (5%), digestive diseases (5%), Diarrheal diseases (5%), unintentional injuries, other (5%), intentional self-harm (3%), and malaria (3%). But among the males and females, cardiovascular disease is the leading cause of death, accounting for one in every four deaths and one in every five deaths respectively. There are a notable higher proportion of female deaths from cancer (12%) than among males (8%).

3.3.2 Out of the total deaths reported under Malignant and other neoplasm, nearly 72% of them pertain to this age group. Of this, cancer of digestive organs constitute the maximum proportion of deaths i.e. (36%), followed by cancer of lip, oral cavity and pharynx(16%), cancer of genitor-urinary organs(11%), cancer of respiratory and intrathoracic organs(9%), cancer of bone, mesothelial & soft tissue, skin and breast (8%) and cancer of lymphoid, haematopoietic and related tissue(7%). Among the cancer of genitor-urinary organs, 79% of the deaths occur in the case of females.

Statement 11.A – Top 10 causes of death in India (ages 25 to 69 as %): SSD, 2001-2003; All India

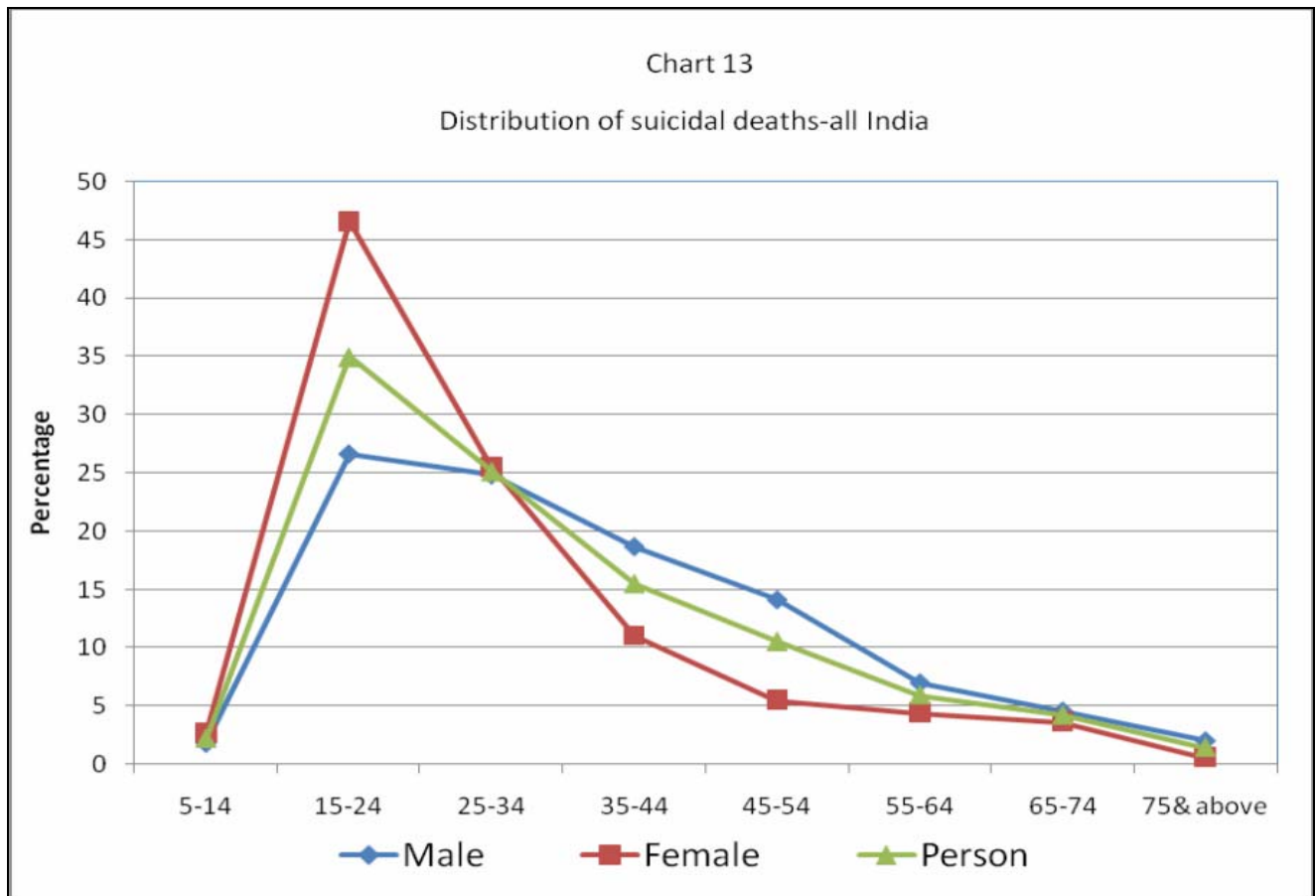
Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	26.3	22.5	24.8
2	COPD, asthma, other respiratory diseases	10.1	10.4	10.2
3	Tuberculosis	11.4	8.3	10.1
4	Malignant and other neoplasms	7.8	11.8	9.4
5	Symptoms signs and ill-defined conditions	4.8	6.0	5.3
6	Digestive diseases	6.1	3.5	5.1
7	Diarrheal diseases	4.0	6.6	5.0
8	Unintentional injuries: Other	5.0	4.1	4.6
9	Intentional self-harm	3.3	2.6	3.0
10	Malaria	2.4	3.4	2.8

The prominent sub-causes of genitor-urinary cancer are- cancer of other and unspecified parts of uterus (58%), cancer of cervix uteri (14%), other cancer of female genital organs (5%) and cancer of ovary (2%). A perusal of proportion of deaths due to cancer to the total deaths in a state in this age group reveals that Kerala has reported maximum cancer deaths(16%) followed by Jammu & Kashmir(15%), West Bengal(12%), Delhi (11.36%), and Gujarat (10.97%). Karnataka, Punjab and Haryana each have reported 10% deaths due to cancer whereas Tamil Nadu, Rajasthan, Maharashtra and Uttar Pradesh reported 9% each. Chart 12 highlights the distribution of deaths at ages 25-69 by major cause groups.



3.3.3 Among all the suicidal deaths reported in this age group, nearly 42% pertain to age group 25- 34. It is important to notice that majority of the female suicidal deaths are concentrated in the age group 15-34 whereas male suicidal deaths have a considerable spread in other age groups also. Males report more deaths from tuberculosis (11% vs. 8%) and digestive diseases (6% vs. 4%) than females.

Chart 13 illustrates the percentage distribution of suicidal deaths across different age groups.



3.3.4 The patterns of deaths at ages 25-69 in EAG states and Assam and Other States are shown in Statement 11.B. The leading causes of death are common in both the category of states except for malaria and other infectious & parasitic diseases in EAG states and Assam, and Intentional self-harm and genito-urinary diseases in the case of Other States. However, the relative ranking of causes varies in these groups; Cardiovascular diseases remain the most dominant cause in both the groups with a 10% point higher risk in the Other States. Other prominent causes of death are Tuberculosis, COPD, asthma, other respiratory diseases and Malignant & other neoplasms. Malaria and Diarrheal diseases are widely prevalent in EAG states and Assam, whereas genito-urinary diseases are more common in the Other States. Statement 10.C shows these patterns for rural and urban areas. Deaths due to cardiovascular diseases constitute a higher proportion in urban areas (33%) than that in rural areas (23%). Tuberculosis deaths are 11% in rural areas vis-à-vis 8% in the urban areas.

Statement 11.B – Top 10 causes of death in India (ages 25 to 69 as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
	EAG States & Assam			
1	Cardiovascular diseases	20.3	17.2	19.0
2	Tuberculosis	14.8	10.1	12.8
3	COPD, asthma, other respiratory diseases	11.8	11.7	11.7
4	Malignant and other neoplasms	6.5	9.1	7.6
5	Diarrheal diseases	6.0	8.9	7.2
6	Symptoms signs and ill-defined conditions	5.6	6.7	6.1
7	Digestive diseases	5.6	4.0	4.9
8	Malaria	4.2	5.2	4.6
9	Unintentional injuries: Other	4.9	4.3	4.6
10	Other infectious and parasitic diseases	2.2	2.5	2.4
	Other States			
1	Cardiovascular diseases	30.3	26.7	28.9
2	Malignant and other neoplasms	8.7	14.0	10.7
3	COPD, asthma, other respiratory diseases	9.1	9.3	9.2
4	Tuberculosis	9.1	6.9	8.3
5	Digestive diseases	6.4	3.2	5.2
6	Symptoms signs and ill-defined conditions	4.3	5.5	4.8
7	Unintentional injuries: Other	5.1	4.0	4.7
8	Intentional self-harm	4.2	3.3	3.9
9	Diarrheal diseases	2.6	4.8	3.4
10	Genito-urinary diseases	3.0	3.0	3.0

Statement 11.C – Top 10 causes of death in India (ages 25 to 69 as %): SSD, 2001-2003; Rural & Urban Areas

Rank	Cause of Death	Male	Female	Person
	Rural Area			
1	Cardiovascular diseases	24.3	20.8	22.9
2	COPD, asthma, other respiratory diseases	10.7	11.0	10.9
3	Tuberculosis	12.2	8.6	10.7
4	Malignant and other neoplasms	7.4	11.2	8.9
5	Diarrheal diseases	4.4	7.3	5.5
6	Symptoms signs and ill-defined conditions	5.0	6.3	5.5
7	Digestive diseases	5.8	3.6	4.9
8	Unintentional injuries: Other	5.3	4.2	4.9
9	Malaria	2.6	3.7	3.1
10	Intentional self-harm	3.5	2.5	3.1
	Urban Area			
1	Cardiovascular diseases	34.3	30.2	32.8
2	Malignant and other neoplasms	9.5	14.4	11.3
3	Tuberculosis	8.2	6.9	7.7
4	COPD, asthma, other respiratory diseases	7.8	7.4	7.7
5	Digestive diseases	7.3	3.4	5.8
6	Symptoms signs and ill-defined conditions	3.9	4.9	4.3
7	Motor vehicle accidents	5.1	1.4	3.7
8	Unintentional injuries: Other	3.6	3.7	3.6
9	Genito-urinary diseases	3.2	3.5	3.3
10	Diabetes mellitus	2.4	3.5	2.8

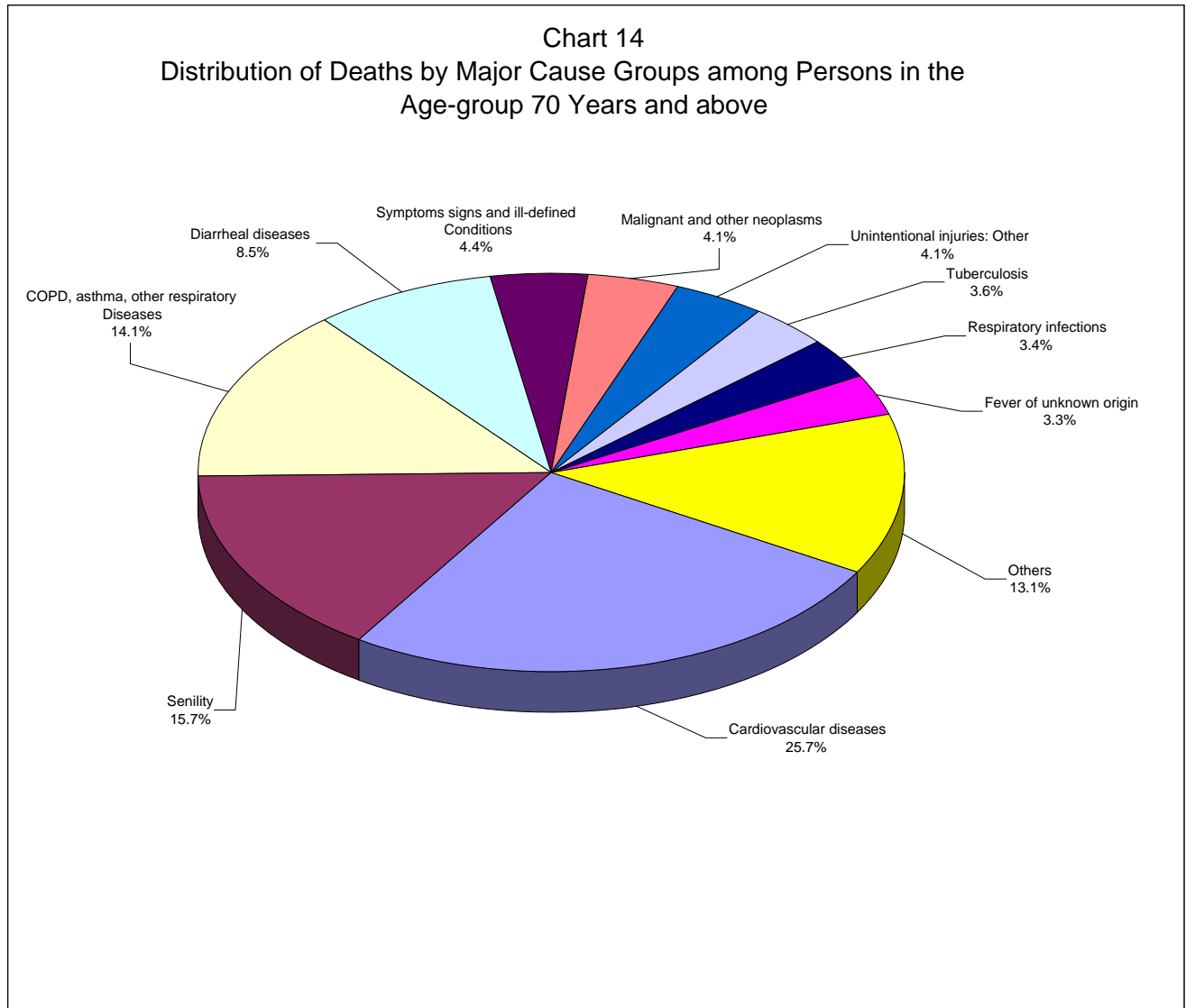
ADULT MORTALITY IN OLD AGE (age 70 and older)

3.4.1 This section reviews the causes of death in the country at ages 70 and above. Statement 12.A below shows that the top 10 known causes of deaths in this range of age are cardiovascular disease (26%), senility (16%), COPD, asthma, other respiratory diseases (14%), Diarrheal diseases (9%), and ill-defined conditions, malignant and other neoplasms, unintentional injuries: other and tuberculosis each accounting for about 4% of the deaths. Respiratory infections and fever of unknown origin each constitutes 3% of deaths at these ages. At these ages, the RHIME as an instrument (like many death registration procedures) has a less reliability in separating multiple medical causes of deaths. Senility is not defined a cause as such, but represents over 15% of recorded deaths. Much of the senility is likely to result from the cardiovascular disease and other chronic ailments. Similarly, much of fever of unknown origin probably represents undiagnosed infections.

Statement 12.A – Top 10 causes of death in India (ages 70+ as %): SSD, 2001-2003; All India

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	26.5	24.8	25.7
2	Senility	13.1	18.4	15.7
3	COPD, asthma, other respiratory diseases	15.7	12.4	14.1
4	Diarrheal diseases	7.3	9.8	8.5
5	Symptoms signs and ill-defined conditions	4.4	4.5	4.4
6	Malignant and other neoplasms	4.6	3.5	4.1
7	Unintentional injuries: Other	3.7	4.6	4.1
8	Tuberculosis	4.5	2.6	3.6
9	Respiratory infections	3.4	3.4	3.4
10	Fever of unknown origin	2.8	3.9	3.3

Chart 14 presents distribution of deaths at ages 70 and higher by major cause groups.



3.4.2 Statement 12.B below shows that the top 10 recorded causes of deaths in this age range by EAG States and Assam and the Other States. The leading causes of death remain same in both the groups but with a varying relative ranking. Statement 12.C shows the top 10 causes by rural and urban areas. As may be seen for EAG states and Assam and the Other States, the dominant causes in urban and rural areas are the same, except for the order of causes of death. Interestingly, the unintentional injury, which is the most common in the form of falls, is seen in the old age throughout the country.

3.4.3 The top ten causes of death along with percentages are presented across important age groups by male, female and person in Statements 13.A to 13.C respectively for ready reference.

Statement 12.B – Top 10 causes of death in India (ages 70+ as %): SSD, 2001-2003; EAG States & Assam and Other States

Rank	Cause of Death	Male	Female	Person
EAG States & Assam				
1	Cardiovascular diseases	21.6	19.1	20.4
2	COPD, asthma, other respiratory diseases	17.8	14.6	16.3
3	Senility	12.0	17.0	14.4
4	Diarrheal diseases	10.7	14.0	12.2
5	Tuberculosis	5.0	3.3	4.2
6	Symptoms signs and ill-defined conditions	4.3	3.9	4.1
7	Respiratory infections	3.9	4.1	4.0
8	Malaria	3.7	4.2	3.9
9	Unintentional injuries: Other	3.9	3.9	3.9
10	Fever of unknown origin	2.7	4.3	3.4
Other States				
1	Cardiovascular diseases	29.8	28.4	29.1
2	Senility	13.9	19.4	16.6
3	COPD, asthma, other respiratory diseases	14.2	11.0	12.6
4	Diarrheal diseases	4.9	7.2	6.0
5	Malignant and other neoplasms	5.5	4.0	4.8
6	Symptoms signs and ill-defined conditions	4.5	4.8	4.7
7	Unintentional injuries: Other	3.5	5.0	4.2
8	Fever of unknown origin	2.8	3.7	3.2
9	Tuberculosis	4.1	2.1	3.1
10	Respiratory infections	3.1	2.9	3.0

Statement 12.C – Top 10 causes of death in India (ages 70+ as %): SSD, 2001-2003; Rural & Urban Areas

Rank	Cause of Death	Male	Female	Person
Rural Area				
1	Cardiovascular diseases	24.3	22.7	23.5
2	Senility	13.6	18.6	16.0
3	COPD, asthma, other respiratory diseases	16.4	13.2	14.9
4	Diarrheal diseases	8.0	10.9	9.3
5	Symptoms signs and ill-defined conditions	4.6	4.6	4.6
6	Unintentional injuries: Other	3.7	4.4	4.0
7	Tuberculosis	4.7	2.6	3.7
8	Malignant and other neoplasms	4.2	3.2	3.7
9	Respiratory infections	3.5	3.6	3.6
10	Fever of unknown origin	3.0	4.2	3.6
Urban Area				
1	Cardiovascular diseases	36.2	33.2	34.7
2	Senility	10.9	17.7	14.3
3	COPD, asthma, other respiratory diseases	12.3	9.0	10.6
4	Malignant and other neoplasms	6.3	4.8	5.6
5	Diarrheal diseases	4.3	5.8	5.0
6	Unintentional injuries: Other	3.8	5.2	4.5
7	Symptoms signs and ill-defined conditions	3.8	3.8	3.8
8	Diabetes mellitus	3.3	3.5	3.4
9	Tuberculosis	3.5	2.4	2.9
10	Genito-urinary diseases	3.6	2.0	2.8

Statement 13.A – Top 10 causes of death by Age Groups in India; Male

Rank	<1	1-4	0-4	5-14	15-24	25-69	70+	All Ages
1	Perinatal conditions (49.2)	Diarrheal diseases (22.0)	Perinatal conditions (36.9)	Unintentional injuries: Other (19.4)	Unintentional injuries: Other (14.7)	Cardiovascular diseases (26.3)	Cardiovascular diseases (26.5)	Cardiovascular diseases (20.3)
2	Respiratory infection (20.5)	Respiratory Infections 21.4)	Respiratory infections (20.7)	Diarrheal diseases (15.2)	Intentional self-harm (14.3)	Tuberculosis (11.4)	COPD, asthma, other respiratory diseases (15.7)	COPD, asthma, other respiratory diseases (9.3)
3	Diarrheal diseases (9.0)	Other infectious and parasitic diseases (15.5)	Diarrheal diseases (12.3)	Other infectious and parasitic diseases (13.5)	Motor vehicle accidents (12.4)	COPD, asthma, other respiratory diseases (10.1)	Senility (13.1)	Tuberculosis (7.1)
4	Other infectious and parasitic diseases (7.9)	Unintentional injuries: Other (9.3)	Other infectious and parasitic diseases (9.8)	Respiratory infections (8.4)	Ill-defined conditions (7.2)	Malignant and other neoplasms (7.8)	Diarrheal diseases (7.3)	Diarrheal diseases (6.7)
5	Congenital anomalies (3.4)	Malaria (6.6)	Ill-defined conditions (3.5)	Malaria (8.1)	Cardiovascular diseases (6.3)	Digestive diseases (6.1)	Malignant and other neoplasms (4.6)	Perinatal conditions (6.4)
6	Ill defined conditions (2.9)	Ill defined conditions (5.3)	Unintentional injuries: Other (3.4)	Ill-defined conditions (5.4)	Tuberculosis (6.0)	Unintentional injuries: Other (5.0)	Tuberculosis (4.5)	Respiratory infections (5.4)
7	Nutritional deficiencies (1.8)	Nutritional deficiencies (4.3)	Congenital anomalies (3.0)	Motor vehicle accidents (5.3)	Other infectious and parasitic diseases (5.2)	Ill-defined conditions (4.8)	Ill-defined conditions (4.4)	Malignant and other neoplasms (5.4)
8	Unintentional injuries: Other (1.5)	Fever of Unknown Origin (3.1)	Nutritional deficiencies (2.4)	Malignant and other neoplasms (3.8)	Diarrheal diseases (5.1)	Diarrheal diseases (4.0)	Unintentional injuries: Other (3.7)	Unintentional injuries: Other (5.2)
9	Malaria (0.9)	Congenital Anomalies (1.9)	Malaria (2.4)	Digestive diseases (2.9)	Malaria (4.8)	Intentional self-harm (3.3)	Respiratory infections (3.4)	Ill-defined conditions (4.6)
10	Fever of unknown origin (0.9)	Digestive Diseases (1.6)	Fever of unknown origin (1.5)	Fever of unknown origin (2.5)	Maternal conditions (-)	Malaria (2.4)	Fever of unknown origin (2.8)	Senility (4.0)

Statement 13.B – Top 10 causes of death by Age Groups in India; Female

Rank	<1	1-4	0-4	5-14	15-24	25-69	70+	All Ages
1	Perinatal conditions (43.1)	Diarrheal diseases (25.2)	Perinatal conditions (29.2)	Diarrheal diseases (19.6)	Intentional self-harm (16.9)	Cardiovascular diseases (22.5)	Cardiovascular diseases (24.8)	Cardiovascular diseases (16.9)
2	Respiratory infection (23.3)	Respiratory Infections (23.3)	Respiratory infections (23.3)	Other infectious and parasitic diseases (16.7)	Maternal conditions (12.6)	Malignant and other neoplasms (11.8)	Senility (18.4)	Diarrheal diseases (9.9)
3	Diarrheal Diseases (10.6)	Other infectious and parasitic diseases (16.2)	Diarrheal diseases (15.3)	Unintentional injuries: Other (12.0)	Unintentional injuries: Other (9.1)	COPD, asthma, other respiratory diseases (10.4)	COPD, asthma, other respiratory diseases (12.4)	COPD, asthma, other respiratory diseases (8.0)
4	Other infectious and parasitic diseases (8.8)	Malaria (6.6)	Other infectious and parasitic diseases (11.2)	Respiratory infections (11.1)	Tuberculosis (7.5)	Tuberculosis (8.3)	Diarrheal diseases (9.8)	Respiratory infections (7.1)
5	Ill defined conditions (3.2)	Unintentional injuries: Other (6.2)	Ill-defined conditions (3.4)	Malaria (10.7)	Ill-defined conditions (7.2)	Diarrheal diseases (6.6)	Unintentional injuries: Other (4.6)	Senility (6.5)
6	Congenital anomalies (2.8)	Nutritional deficiencies (5.1)	Nutritional deficiencies (3.2)	Ill-defined conditions (4.6)	Diarrheal diseases (7.2)	Ill-defined conditions (6.0)	Ill-defined conditions (4.5)	Perinatal conditions (6.2)
7	Nutritional deficiencies (2.3)	Ill defined conditions (3.9)	Malaria (3.0)	Fever of unknown origin (3.3)	Cardiovascular diseases (6.3)	Unintentional injuries: Other (4.1)	Fever of unknown origin (3.9)	Malignant and other neoplasms (6.0)
8	Unintentional injuries: Other (1.3)	Fever of Unknown Origin (3.1)	Unintentional injuries: Other (2.9)	Digestive diseases (2.8)	Malaria (4.6)	Digestive diseases (3.5)	Malignant and other neoplasms (3.5)	Ill-defined conditions (5.0)
9	Malaria (1.3)	Digestive diseases (1.8)	Congenital anomalies (2.3)	Motor vehicle accidents (2.1)	Other infectious and parasitic diseases (4.4)	Malaria (3.4)	Respiratory infections (3.4)	Tuberculosis (4.7)
10	Fever of unknown origin (0.9)	Congenital anomalies (1.3)	Fever of unknown origin (1.6)	Malignant and other neoplasms (2.0)	Motor vehicle accidents (1.7)	Intentional self-harm (2.6)	Tuberculosis (2.6)	Unintentional injuries: Other (4.5)

Statement 13.C – Top 10 causes of death by Age Groups in India; Person

Rank	<1	1-4	0-4	5-14	15-24	25-69	70+	All Ages
1	Perinatal conditions (46.3)	Diarrheal diseases (23.8)	Perinatal conditions (33.1)	Diarrheal diseases (17.4)	Intentional self-harm (15.6)	Cardiovascular diseases (24.8)	Cardiovascular diseases (25.7)	Cardiovascular diseases (18.8)
2	Respiratory infection (21.8)	Respiratory Infections (22.5)	Respiratory infections (22.0)	Unintentional injuries: Other (15.7)	Unintentional injuries: Other (11.8)	COPD, asthma, other respiratory diseases (10.2)	Senility (15.7)	COPD, asthma, other respiratory diseases (8.7)
3	Diarrheal diseases (9.7)	Other infectious and parasitic diseases (15.9)	Diarrheal diseases (13.8)	Other infectious and parasitic diseases (15.1)	Ill-defined conditions (7.2)	Tuberculosis (10.1)	COPD, asthma, other respiratory diseases (14.1)	Diarrheal diseases (8.1)
4	Other infectious and parasitic diseases (8.3)	Unintentional injuries: Other (7.5)	Other infectious and parasitic diseases (10.5)	Respiratory infections (9.7)	Motor vehicle accidents (6.9)	Malignant and other neoplasms (9.4)	Diarrheal diseases (8.5)	Perinatal conditions (6.3)
5	Congenital anomalies (3.1)	Malaria (6.6)	Ill-defined conditions (3.4)	Malaria (9.4)	Tuberculosis (6.8)	Ill-defined conditions (5.3)	Ill-defined conditions (4.4)	Respiratory infections (6.2)
6	Ill defined conditions (3.0)	Nutritional Deficiencies (4.8)	Unintentional injuries: Other (3.2)	Ill-defined conditions (5.0)	Maternal conditions (6.5)	Digestive diseases (5.1)	Malignant and other neoplasms (4.1)	Tuberculosis (6.0)
7	Nutritional deficiencies (2.0)	Ill defined conditions (4.5)	Nutritional deficiencies (2.8)	Motor vehicle accidents (3.7)	Cardiovascular diseases (6.3)	Diarrheal diseases (5.0)	Unintentional injuries: Other (4.1)	Malignant and other neoplasms (5.7)
8	Unintentional injuries: Other (1.4)	Fever of Unknown origin (3.1)	Malaria (2.7)	Malignant and other neoplasms (2.9)	Diarrheal diseases (6.2)	Unintentional injuries: Other (4.6)	Tuberculosis (3.6)	Senility (5.1)
9	Malaria (1.1)	Digestive diseases (1.7)	Congenital anomalies (2.7)	Digestive diseases (2.9)	Other infectious and parasitic diseases (4.8)	Intentional self-harm (3.0)	Respiratory infections (3.4)	Unintentional injuries: Other (4.9)
10	Fever of unknown origin (0.9)	Congenital anomalies (1.5)	Fever of unknown origin (1.5)	Fever of unknown origin (2.9)	Malaria (4.7)	Malaria (2.8)	Fever of unknown origin (3.3)	Ill-defined conditions (4.8)

CHAPTER-4

MORTALITY FROM SPECIAL CONDITIONS

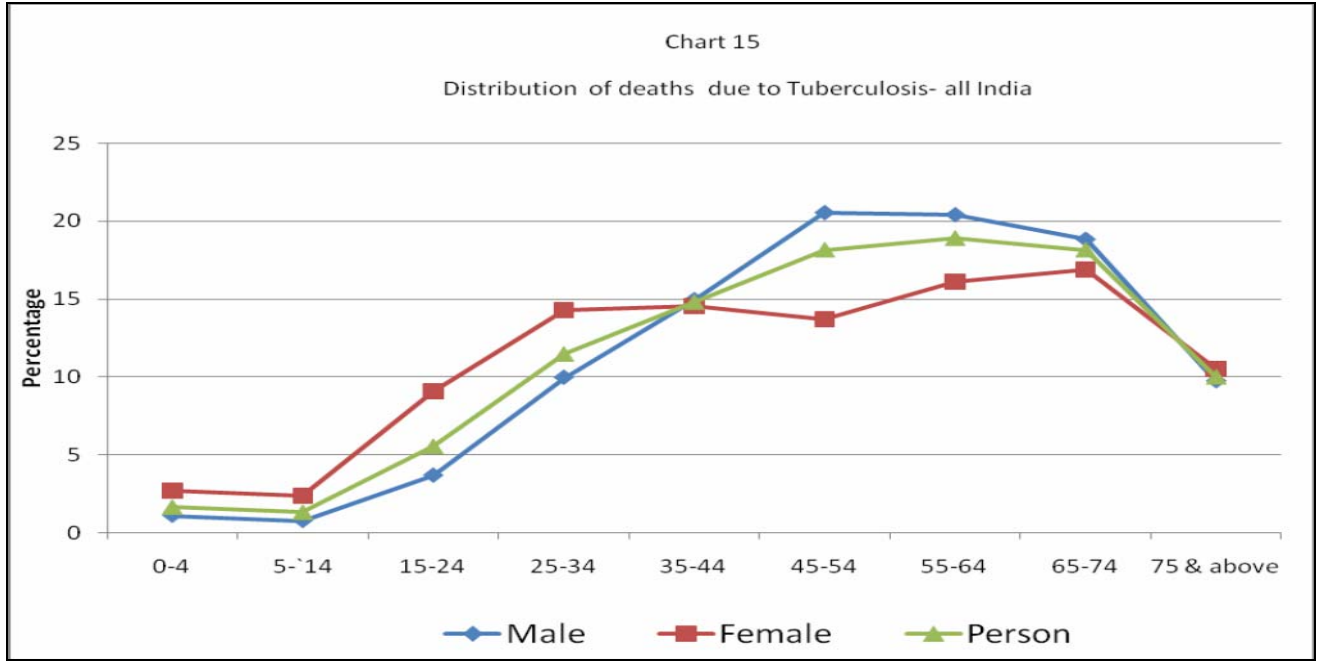
This chapter reviews the specific causes of death in the country which are not only of national interest but are also watched globally. These are mortality on account of tuberculosis, malaria and HIV/AIDS as well as maternal deaths.

4.1 Statement 14.A below shows the proportion of all deaths by gender from tuberculosis, malaria, maternal conditions and HIV/AIDS for all ages and for adults in middle age (age 25-69 years). Tuberculosis is the leading cause among these four conditions, causing about 6% of all deaths, and 10% of deaths in the middle age. Malaria follows it with about 3% of all deaths. However, this should be seen with the caveat that the malaria diagnosis may represent other fevers, which are not due to malaria. Maternal conditions account for about 2% of female deaths at all ages, 3% at ages 25-69, 9% at ages 15-49 and 11% at ages 15-44. AIDS accounts for 0.5% of deaths at all ages and about 1% in middle age. But this proportion pertains to direct AIDS deaths only. Overall, these four specific causes of death account for 10% of deaths at all ages and 15% at ages 25-69.

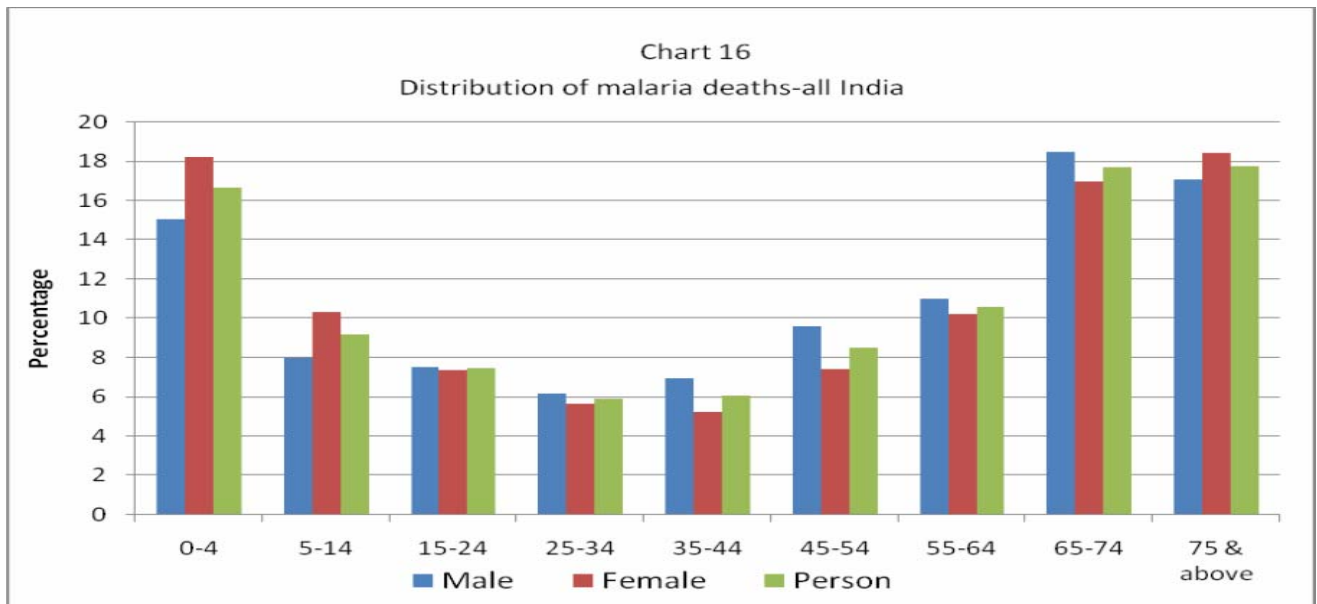
Statement 14.A – Proportion of deaths from specific medical causes in India: SSD 2001-2003; All India

Cause of Death	Male (%)	Female (%)	Persons (%)
All Ages			
Tuberculosis	7.1	4.7	6.0
Malaria	2.7	3.5	3.1
Maternal conditions	-	1.8	-
AIDS (direct only)	0.6	0.2	0.5
Ages 25 – 69			
Tuberculosis	11.4	8.3	10.1
Malaria	2.4	3.4	2.8
Maternal conditions	-	2.8	-
AIDS (direct only)	1.2	0.5	0.9

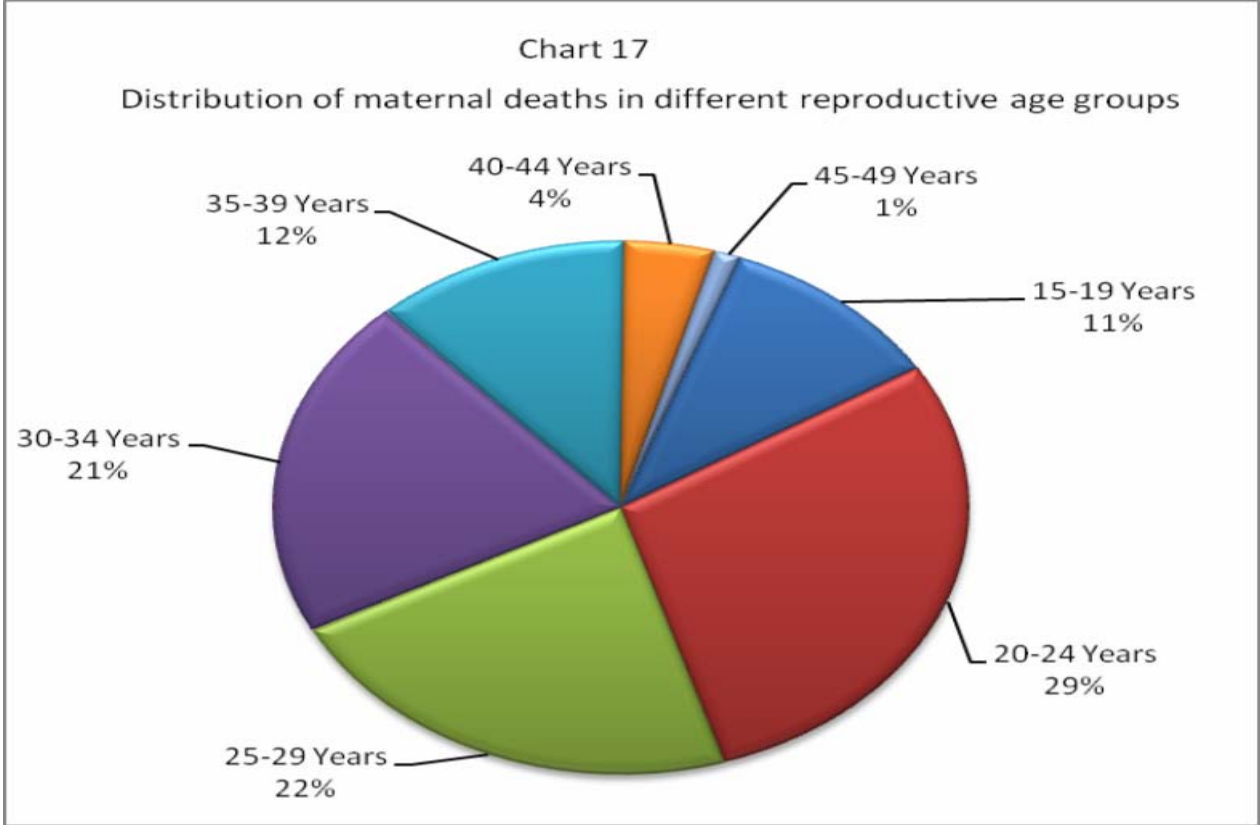
4.2 Chart 15 below highlights the percentage distribution of deaths due to tuberculosis across different age groups. It may be seen that tuberculosis as a cause of death is more prevalent among females up to ages 44 after which it declines significantly. In the case of males, it shows a progressive trend after the age of 44. The gap between the proportions of male-female deaths is more pronounced in the age group 45-74.



4.3 Chart 16 depicts the percentage distribution of deaths due to malaria across different age groups. As would be seen that malaria causes considerably higher number of deaths among children and in the older ages. The proportion of females dying from malaria is higher than that of males in the initial age groups viz. 0 -4 and 5-14 and also after age 75. The lowest proportion of deaths is observed in the age group 25-44.



4.4 Chart 17 depicts the percentage distribution of maternal deaths to female deaths in different reproductive age groups. More than two-third of the maternal deaths are of women in the age group 20-34. Another about 11% of the women die due to maternal conditions in the age group 15-19. The Report 'Maternal Mortality in India 1997-2003' discusses in detail the causes of death due to maternal conditions.



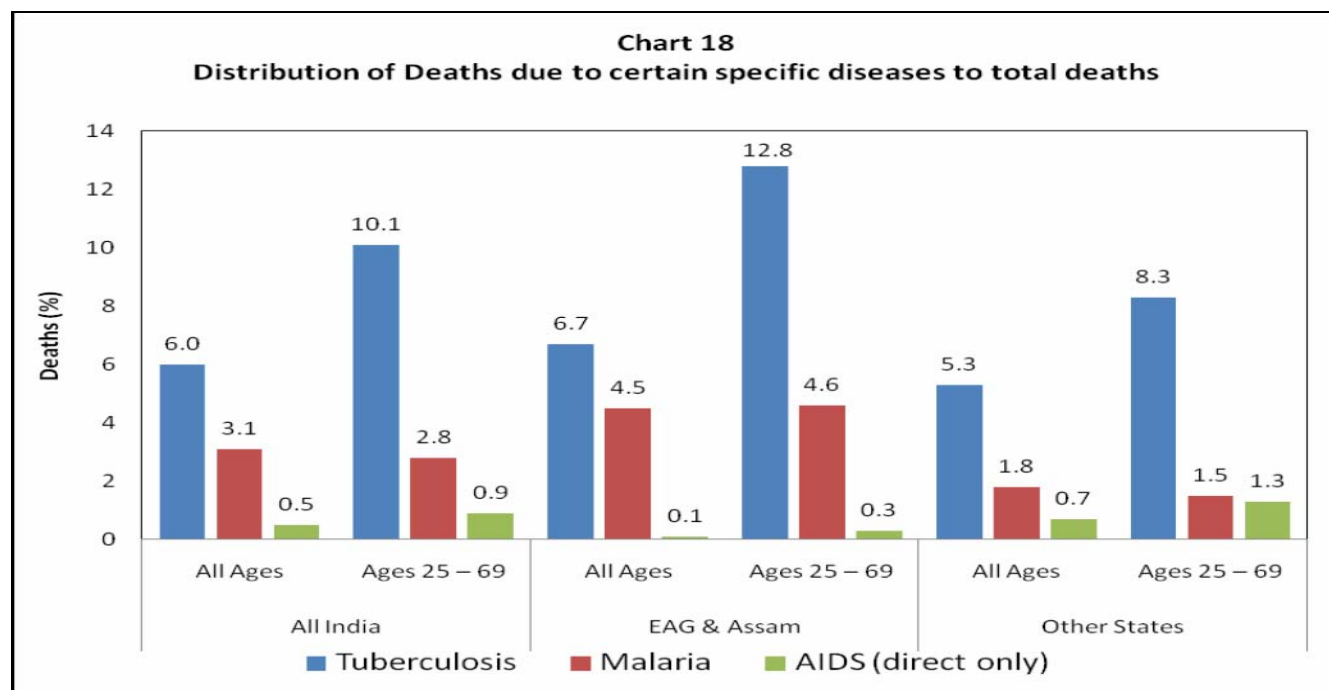
4.5 Statement 14.B below shows the proportion of these four selected causes by EAG states and Assam and the Other States. The overall patterns are similar to those seen nationally, except for the fact that tuberculosis, malaria and maternal deaths are higher in the EAG states and Assam with less prevalence of AIDS. In fact, malaria causes three times more deaths and maternal conditions almost twice the female deaths at all ages in EAG states and Assam if compared to the Other States. There is a sizeable increase in proportion of deaths due to AIDS (direct only) at all ages in Other states vis-à-vis that of EAG states and Assam with the proportion of male deaths also been higher than that of female deaths. Similar analysis by rural and urban in Statement 14.C shows similar patterns. The tuberculosis, malaria, and maternal deaths are more common in rural areas. However, the

AIDS deaths are of about the same level both in rural as well as in urban areas. But these are more pronounced at ages 25-69 both the groups.

Statement 14.B – Proportion of deaths from specific medical causes in India: SSD 2001-2003; EAG States & Assam and Other States

Cause of Death	Male (%)	Female (%)	Person (%)
EAG States & Assam			
All Ages			
Tuberculosis	8.1	5.2	6.7
Malaria	4.1	5.0	4.5
Maternal conditions	-	2.4	-
AIDS (direct only)	0.2	0.1	0.1
Ages 25 – 69			
Tuberculosis	14.8	10.1	12.8
Malaria	4.2	5.2	4.6
Maternal conditions	-	4.1	-
AIDS (direct only)	0.4	0.2	0.3
Other States			
All Ages			
Tuberculosis	6.3	4.1	5.3
Malaria	1.6	2.1	1.8
Maternal conditions	-	1.2	-
AIDS (direct only)	1.0	0.4	0.7
Ages 25 – 69			
Tuberculosis	9.1	6.9	8.3
Malaria	1.3	2.0	1.5
Maternal conditions	-	1.8	-
AIDS (direct only)	1.7	0.7	1.3

Chart 18 depicts the percentage distribution of deaths due to above diseases to total deaths (except for deaths from maternal conditions).



Statement 14.C – Proportion of deaths from specific medical causes in India: SSD 2001-2003; Rural & Urban Areas

Cause of Death	Male (%)	Female (%)	Person (%)
Rural Area			
All Ages			
Tuberculosis	7.3	4.7	6.1
Malaria	2.9	3.8	3.3
Maternal conditions	-	1.9	-
AIDS (direct only)	0.6	0.2	0.5
Ages 25 – 69			
Tuberculosis	12.2	8.6	10.7
Malaria	2.6	3.7	3.1
Maternal conditions	-	3.0	-
AIDS (direct only)	1.2	0.5	0.9
Urban Area			
All Ages			
Tuberculosis	5.9	4.5	5.3
Malaria	1.7	2.1	1.9
Maternal conditions	-	1.1	-
AIDS (direct only)	0.8	0.2	0.5
Ages 25 – 69			
Tuberculosis	8.2	6.9	7.7
Malaria	1.7	2.1	1.8
Maternal conditions	-	1.8	-
AIDS (direct only)	1.2	0.2	0.8

4.6 Statement 15 presents AIDS deaths in more detail. The age group 15-59 is taken as the reference age group for AIDS statistics. The states are characterised with two categories: the states with high HIV prevalence (based on HIV testing of antenatal women by the National AIDS Control Organisation), and the states with low prevalence.

Statement 15 – Proportion of AIDS deaths (ages 15-59 as %) in selected Indian states: SSD, 2001-2003

Region	Male	Female	Person
States with high HIV Prevalence*	4.6	1.9	3.7
States with low HIV Prevalence+	0.5	0.2	0.4
All India	1.7	0.6	1.3

*Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Mizoram, Manipur, and Nagaland
+All other states

4.7 The high prevalence states are Andhra Pradesh, Karnataka, Maharashtra, Tamil Nadu, Mizoram, Manipur, and Nagaland. It comes out that AIDS is a direct cause of death in about 3.7% of deaths at ages 15-59 in the high prevalence states, but only 0.4% in the low prevalence states. This ratio is comparable with the observed differences in the antenatal clinic result. Further, the findings are in conformity with the results of NFHS-III. However, the chance of some degree of under reporting of AIDS deaths in the RHIME method is not ruled out as HIV infection causes deaths from tuberculosis and other conditions.



CHAPTER -5

MORTALITY BY MAJOR REGIONS

This Section reviews the specific causes of death in the country that occur in various Regions. The Regions are divided into six categories as follows:

North: Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Uttarakhand

North-East: Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura

East: Bihar, Jharkhand, West Bengal and Orissa

Central: Chhattisgarh, Madhya Pradesh, Rajasthan and Uttar Pradesh

West: Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, and Maharashtra

South: Andhra Pradesh, Andaman & Nicobar Islands, Karnataka, Kerala, Lakshadweep, Puducherry and Tamil Nadu

5.1 Statements 16.A to 16.F show the leading causes of death at all ages by these major regions. The Top 10 causes are similar, but there is a marked variation in the rank order of specific causes. Cardiovascular disease is the leading cause of death in all the regions of India, with the highest proportion in Southern region (25%) and the lowest in Central region (12%). The other prominent causes of death across different regions are respiratory diseases, Diarrheal diseases, perinatal conditions, tuberculosis and cancer.

5.2 Respiratory diseases account for substantial proportion of deaths in all the regions with the maximum reported in the Central region and the minimum in North-Eastern region. The highest proportion of deaths due to Diarrheal diseases is observed in Eastern region (10.4%), followed closely by Central (9.8%) and North-Eastern regions (9.2%).

5.3 Diarrheal diseases account for more than 5% of the total deaths in North, West and Southern regions respectively. Perinatal conditions are responsible for the maximum proportion of deaths in Central region (7.9%) followed by West (7.3%), East (7%), North-

East (6.1%), South (4.1%) and North (3.9%). The proportion of deaths attributable to tuberculosis ranges from 5.1% in Southern region to 7.2% in Central region. Cancer deaths are more pronounced in South, North, North-East and Western regions.

5.4 In Eastern and North-Eastern regions, deaths due to malaria are notably higher at 6% and 5% respectively, of deaths due to all causes. In the Southern region, suicide constitutes nearly 5% of all deaths at all ages. Senility and ill-defined symptoms and signs constitute 8% to 12% of deaths across different regions with the highest (12%) in Southern region. The results are influenced by the age at death, with the States having higher proportion of older populations showing more deaths due to ill-defined causes.

5.5 Statements 16.A to 16.F shows the region-wise distribution of causes of death by gender. This information in conjunction with age-wise distribution of deaths as provided in statement 17.A to 17.F would facilitate detailed analysis of mortality situation across different regions.

Statement 16.A: Top10 causes of death (all ages as %) in SSD, 2001-2003; Major Region - North: (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Uttarakhand)

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	24.0	19.9	22.3
2	Respiratory diseases	10.4	8.8	9.7
3	Malignant and other neoplasm	6.7	8.2	7.3
4	Diarrheal diseases	5.0	8.4	6.4
5	Senility	4.7	7.2	5.8
6	Symptoms signs and ill defined conditions	5.0	5.7	5.3
7	Tuberculosis	6.0	4.1	5.2
8	Respiratory infections	4.4	6.3	5.2
9	Unintentional injuries: Other	5.1	4.8	5.0
10	Perinatal conditions	4.2	3.5	3.9

Statement 16.B: Top10 causes of death (all ages as %) in SSD, 2001 -2003; Major Region - North East: (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura)

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	17.2	13.7	15.7
2	Diarrheal diseases	7.9	11.0	9.2
3	Respiratory infections	6.6	7.9	7.1
4	Malignant and other neoplasm	7.1	6.2	6.7
5	Respiratory diseases	6.6	6.7	6.7
6	Tuberculosis	7.3	5.4	6.5
7	Perinatal conditions	5.7	6.7	6.1
8	Malaria	6.0	5.1	5.7
9	Digestive diseases	6.0	4.1	5.2
10	Other infectious and parasitic diseases	4.0	4.8	4.3

Statement 16.C: Top10 causes of death (all ages as %) in SSD, 2001 -2003; Major Region - East: (Bihar, Jharkhand, Orissa and West Bengal)

Rank	Cause of death	Male	Female	Person
1	Cardiovascular diseases	19.5	17.0	18.3
2	Diarrheal diseases	9.0	12.0	10.4
3	Respiratory diseases	7.4	6.8	7.1
4	Perinatal conditions	7.4	6.7	7.0
5	Respiratory Infections	5.8	7.4	6.6
6	Senility	5.1	7.2	6.1
7	Tuberculosis	6.5	4.2	5.4
8	Malaria	5.0	5.7	5.3
9	Unintentional injuries: Other	5.1	4.6	4.9
10	Symptoms signs and ill defined conditions	4.8	4.8	4.8

Statement 16.D: Top10 causes of death (all ages as %) in SSD, 2001 -2003; Major Region - Central: (Chhattisgarh, Madhya Pradesh, Rajasthan and Uttar Pradesh)

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	13.5	10.4	12.1
2	Respiratory diseases	11.8	8.9	10.5
3	Respiratory infections	8.9	11.3	10.0
4	Diarrheal diseases	8.2	11.6	9.8
5	Perinatal conditions	8.1	7.6	7.9
6	Tuberculosis	8.6	5.7	7.2
7	Other infectious and parasitic diseases	5.5	7.1	6.2
8	Symptoms signs and ill defined conditions	4.9	4.8	4.8
9	Unintentional injuries: Other	4.9	4.1	4.5
10	Malignant and other neoplasm	3.9	4.7	4.3

Statement 16.E: Top10 causes of death (all ages as %) in SSD, 2001 -2003; Major Region - West: (Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat, and Maharashtra)

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	23.6	22.0	22.9
2	Respiratory diseases	8.8	8.9	8.8
3	Perinatal conditions	7.3	7.2	7.3
4	Malignant and other neoplasm	6.3	6.5	6.4
5	Tuberculosis	7.7	4.3	6.2
6	Diarrheal diseases	4.8	7.9	6.1
7	Unintentional injuries: Other	5.0	5.3	5.1
8	Respiratory infections	3.9	4.9	4.3
9	Senility	2.8	5.7	4.1
10	Symptoms signs and ill defined conditions	3.6	4.8	4.1

Statement 16.F: Top10 causes of death (all ages as %) in SSD, 2001 -2003; Major Region - South: (Andhra Pradesh, Andaman & Nicobar Islands, Karnataka, Kerala, Lakshadweep, Puducherry and Tamil Nadu)

Rank	Cause of Death	Male	Female	Person
1	Cardiovascular diseases	27.1	22.7	25.1
2	Respiratory diseases	8.9	7.9	8.5
3	Malignant and other neoplasm	6.5	8.3	7.3
4	Senility	4.5	9.6	6.7
5	Unintentional injuries: Other	6.2	5.1	5.7
6	Symptoms signs and ill defined conditions	4.9	5.8	5.3
7	Tuberculosis	6.0	4.0	5.1
8	Diarrheal diseases	3.8	6.5	5.0
9	Intentional injuries: Suicide	4.9	4.2	4.6
10	Perinatal conditions	4.2	4.0	4.1

Statement 17.A: Distribution of deaths by age and gender in SSD, 2001 -2003; Major Region - North: (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab and Uttarakhand)

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0-4	830 (11.6)	849 (16.7)	1679 (13.7)
5-14	123 (1.7)	126 (2.5)	249 (2.0)
15-24	349 (4.9)	256 (5.0)	605 (4.9)
25-34	461 (6.4)	258 (5.1)	719 (5.9)
35-44	526 (7.3)	279 (5.5)	805 (6.6)
45-54	769 (10.7)	376 (7.4)	1145 (9.3)
55-69	1628 (22.7)	1065 (20.9)	2693 (22.0)
70 & Above	2473 (34.5)	1881 (37.0)	4354 (35.5)
Total	7159 (100.0)	5090 (100.0)	12249 (100.0)

Statement 17.B: Distribution of deaths by age and gender in SSD, 2001 -2003; Major Region - North East: (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura)

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0-4	891 (16.9)	828 (20.9)	1719 (18.6)
5-14	199 (3.8)	173 (4.4)	372 (4.0)
15-24	319 (6.1)	285 (7.2)	604 (6.5)
25-34	362 (6.9)	275 (6.9)	637 (6.9)
35-44	454 (8.6)	261 (6.6)	715 (7.7)
45-54	631 (12.0)	311 (7.8)	942 (10.2)
55-69	1181 (22.4)	872 (22.0)	2053 (22.2)
70 & Above	1228 (23.3)	958 (24.2)	2186 (23.7)
Total	5265 (100.0)	3963 (100.0)	9228 (100.0)

Statement 17.C: Distribution of deaths by age and gender in SSD, 2001 -2003; Major Region - East: (Bihar, Jharkhand, Orissa and West Bengal)

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0-4	2760 (19.6)	2801 (22.3)	5561 (20.9)
5-14	506 (3.6)	565 (4.5)	1071 (4.0)
15-24	579 (4.1)	693 (5.5)	1272 (4.8)
25-34	622 (4.4)	566 (4.5)	1188 (4.5)
35-44	873 (6.2)	626 (5.0)	1499 (5.6)
45-54	1332 (9.5)	820 (6.5)	2152 (8.1)
55-69	3481 (24.7)	2785 (22.2)	6266 (23.5)
70 & Above	3914 (27.8)	3700 (29.5)	7614 (28.6)
Total	14067 (100.0)	12556 (100.0)	26623 (100.0)

Statement 17.D: Distribution of deaths by age and gender in SSD, 2001 -2003; Major Region - Central: (Chhattisgarh, Madhya Pradesh Rajasthan and Uttar Pradesh)

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0-4	4265 (26.8)	4391 (32.2)	8656 (29.3)
5-14	569 (3.6)	598 (4.4)	1167 (4.0)
15-24	659 (4.1)	806 (5.9)	1465 (5.0)
25-34	786 (4.9)	704 (5.2)	1490 (5.0)
35-44	922 (5.8)	603 (4.4)	1525 (5.2)
45-54	1348 (8.5)	712 (5.2)	2060 (7.0)
55-69	3447 (21.7)	2492 (18.3)	5939 (20.1)
70 & Above	3905 (24.6)	3332 (24.4)	7237 (24.5)
Total	15901 (100.0)	13638 (100.0)	29539 (100.0)

Statement 17.E: Distribution of deaths by age and gender in SSD, 2001 -2003; Major Region - West: (Dadra & Nagar Haveli, Daman & Diu, Goa, Gujarat and Maharashtra)

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0-4	1177 (15.2)	1057 (17.4)	2234 (16.2)
5-14	128 (1.6)	131 (2.2)	259 (1.9)
15-24	292 (3.8)	284 (4.7)	576 (4.2)
25-34	477 (6.1)	243 (4.0)	720 (5.2)
35-44	634 (8.2)	279 (4.6)	913 (6.6)
45-54	853 (11.0)	373 (6.1)	1226 (8.9)
55-69	1963 (25.3)	1427 (23.5)	3390 (24.5)
70 & Above	2239 (28.8)	2275 (37.5)	4514 (32.6)
Total	7763 (100.0)	6069 (100.0)	13832 (100.0)

Statement 17.F: Distribution of deaths by age and gender in SSD, 2001 -2003; Major Region - South: (Andhra Pradesh, Andaman & Nicobar Islands, Karnataka, Kerala, Lakshadweep, Puducherry and Tamil Nadu)

Age Group	Number of Deaths (% Deaths)		
	Male	Female	Person
0-4	961 (7.7)	848 (8.7)	1809 (8.1)
5-14	170 (1.4)	143 (1.5)	313 (1.4)
15-24	510 (4.1)	527 (5.4)	1037 (4.7)
25-34	847 (6.8)	492 (5.1)	1339 (6.0)
35-44	1115 (8.9)	543 (5.6)	1658 (7.5)
45-54	1587 (12.7)	774 (8.0)	2361 (10.6)
55-69	3742 (20.9)	2527 (26.0)	6269 (28.2)
70 & Above	3566 (28.5)	3869 (39.8)	7435 (33.5)
Total	12498 (100.0)	9723 (100.0)	22221 (100.0)



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